



The Ontological Nature of Part-Whole Oscillations

Michael W. Stadler

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Michael W. Stadler

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Abstract

English

The nature of structures comprising part-whole relations belongs to the oldest, most fundamental and still discussed questions of philosophical ontology. Unlike many former approaches, which either give priority to the parts or to the whole of such structures, the present project is an ontological investigation that suggests an alternative to a hierarchical conception of parts and whole with a one-sided dependence relationship. In considering the dynamic ‘in-between’ or interplay of parts and whole, I develop and determine an ontological category called ‘part-whole oscillations’ (PWO). This development combines two crucial methodical approaches: a top-down, a priori method of formal ontology and a bottom-up recognition of empirical phenomena. By elaborating on E. Husserl’s 3rd *Logical Investigation*, I show that the first method is only of restricted usefulness for the determination of PWO’s ontological nature, because it leads to formal inconsistencies. It is only in applying the second method that we can get a clearer picture of what the ontological category of PWO amounts to. This ‘empirical’ part of this project is carried out by interpreting Cognitive Linguistic’s notions of ‘conceptual metaphor’ and conceptual metonymy. It is also carried out by critically analyzing the notion of ‘Gestalt’ as it is developed in classical and contemporary research of Gestalt theory. Through determining this category in these ways and through arguing in favor of empirical perception for the sake of ontological insights, I demonstrate that both an exclusively analytical approach towards a structure’s parts and an exclusively synthetical approach towards a structure’s whole is insufficient. This is the case in particular regarding perceptually meaningful part-whole structures, and should therefore be updated with a bidirectional and more experience-based conception of interdependent parts and wholes.

Deutsch

Die Beschaffenheit von Strukturen mit Verhältnissen zwischen Ganzen und Teilen gehört zu den ältesten, grundlegendsten und immer noch besprochenen Fragen der philosophischen Ontologie. Im Gegensatz zu vielen früheren Ansätzen, welche entweder die Teile oder das Ganze solcher Strukturen priorisieren, stellt das vorliegende Projekt eine ontologische Untersuchung dar, die eine Alternative zu einem hierarchischen Verständnis von Teilen und Ganzen mit einseitigem Abhängigkeitsverhältnis anbietet. Unter Berücksichtigung des dynamischen ‘Dazwischen’ beziehungsweise Wechselspiels von Teilen und Ganzen, entwickle und bestimme ich eine ontologische Kategorie namens ‘Teil-Ganze-Oszillationen’ (kurz PWO: *part-whole oscillations*). Diese Entwicklung verbindet zwei wichtige methodische Ansätze: die apriorische *top-down* Methode formaler Ontologie und die *bottom-up* Wahrnehmung empirischer Phänomene. Anhand der

dritten von E. Husserls *Logischen Untersuchungen* zeige ich, dass die erste Methode nur von bedingtem Nutzen für die Bestimmung von PWOs ontologischer Beschaffenheit ist, da sie zu formalen Ungereimtheiten führt. Erst in Anwendung der zweiten Methode können wir zu einem klareren Verständnis der gesuchten ontologischen Kategorie gelangen. Dieser ‘empirische’ Aspekt des vorliegenden Projekts wird zuerst durch eine Interpretation der kognitiv-linguistischen Kategorien der ‘konzeptuellen Metaphor’ und der ‘konzeptuellen Metonymie’ umgesetzt. Die Umsetzung erfolgt sodann durch eine kritische Analyse des Begriffs der ‘Gestalt’, wie er in der klassischen sowie zeitgenössischen Forschung der Gestalttheorie entwickelt wird. Indem ich PWO dergestalt bestimme und zugunsten der empirischen Wahrnehmung für den Zweck ontologischer Erkenntnisse argumentiere, zeige ich, dass weder eine rein analytische Herangehensweise an die Teile einer Struktur, noch eine rein synthetische Herangehensweise an das Ganze einer Struktur ausreichend ist. Im Speziellen ist dies der Fall für wahrnehmungsmäßig sinnvolle Teil-Ganze-Strukturen, weswegen beide Herangehensweisen durch ein bidirektionales und mehr erfahrungsbasiertes Verständnis von voneinander abhängigen Teilen und Ganzen erneuert werden sollten.

Preface and Acknowledgments

According to the Bartle taxonomy of player types, one can distinguish between four kinds of video gamers: *killers*, *achievers*, *socializers* and *explorers*. *Killers* enjoy competition by force or strategy; *achievers* are perfectionists who want to get out of a game as much as they can; *socializers* have fun in interacting and hanging out with other players, and *explorers* like to create, craft and discover the world of the game in a non-linear way. This taxonomy of players is more general than it seems at first sight. For example, it is easily applicable to PhD students in philosophy and their respective theses, whereby, of course and as always, overlaps are the norm rather than the exception. Firstly, there are killers who enjoy fighting with arguments as if they were on a battlefield: They ‘defend’, ‘hold’, ‘attack’ a position or any kind of -ism with rigor and intelligence and have a keen sense for abstract, ‘cold-blooded’ reasoning. Then there are *achievers* who often have been working on their subject matter since long before their PhD period in order to become a designated specialist in their research area. They have read nearly everything of the primary and secondary literature on their topic; they take the omnipresent publish-or-perish mentality to heart; they know exactly where there are research desiderata to be filled, and their strengths are therefore planning and knowledge. The *socializers* among the PhD students of philosophy invest a great amount of time to learn languages, visit conferences, make connections, and engage in or avoid departmental politics. They usually regard their own thesis as a project of collaboration or as a contribution to a team of researchers rather than the masterpiece of the lone wolf. Finally, the *explorers* enjoy undertaking research off the beaten tracks by discovering more than just one side and implication of the subject matter they are interested in. They do so by integrating different, even non-philosophical disciplines into their work and by assembling lines of argumentation that may seem unconventional. Their strengths are curiosity and originality. Thus, each of these four types has clear benefits, and the weaknesses of each type are mirrored in the benefits of the others. But I can think of nobody, neither in my experience as a gamer nor in my experience as a PhD student in philosophy, who ever embodied all of the four types at once. Even one type alone is hardly possible to master.

When I look back now on my thesis and on the years spent on the preparation, the research, the discussions and the actual writing of it, it seems that for the most part I can identify my way of tackling philosophy with the *explorers*, and, to a lesser extent, with the *achievers*. Although, in particular for the content of my thesis, it would have been useful to possess more qualities of a *killer* to persuasively develop my own position and to show the insufficiencies of others, it somehow happened that I saw more truth than falsity in most of the texts I studied. For one reason or another, I preferred to combine different stances into an assemblage of which only the name is my own rather than to destruct them in order to construct something which has to be defended in order to exist. This does not mean, however, that I consider my thesis to be the result of teamwork, of an academic environment like you would have in a graduate school or as doctoral assistant, of teaching and discussions with students, or at least of previous, similar

studies in one single discipline, the footsteps of which I intend to follow. For reasons internal to the content of my thesis and external to its realization, I was not able to be as much of a *socializer* as I would have liked to be, notwithstanding the chance I took to learn Italian and to present at conferences in the Czech Republic, Germany, Italy, the Netherlands, Spain, and Japan. What I did, however, and what I have always enjoyed, was to pick from the topics that interest me, even if they range over different scientific disciplines, and to transcend my horizon, in other words, to explore what is possible in writing a philosophical text and perhaps to go slightly beyond this conventional threshold. The work and the working of *explorers* is genuinely open-ended, which is why, as I will also mention in the thesis itself, I consider my research only as a building block which can and should be implemented like modelling clay into a more embracing theory. In order to make this possible and to avoid a certain vagueness, superficiality or hastiness that is often connected with interdisciplinary work conducted by one single person, I attempted to be as careful as possible in my acts of exploring and to not just ‘skate over’ the fields I discuss, but to concentrate only on a few thinkers and topics therein. This, together with the vision that there is much more to be done (inside and especially outside of academia) with the ideas touched upon in the following pages, makes me want to join the camp of the *achievers* as well. Since I am and want to be anything but an expert in the fields I explore, however, I join this camp only as an onlooker for whom philosophical reflection counts less as a result and as the product of an industry of experts, and more as a movement towards discovery beyond the limits of one’s own horizon. *Careful philosophical exploration* is thus the watermark underlying the following pages, with all the risks and benefits this hybrid form of philosophy implies.

Luckily, no matter with which type or types one identifies, there are always people without whom the privilege of embodying such a type would be impossible in the first place. First and foremost, I would like to thank my two supervisors Matteo d’Alfonso and Georg Stenger for the freedom, trust and support they gave me in developing this thesis. I also thank Hans Rainer Sepp for helping me with publications and for seconding some decisions I made in this project’s early stages. Furthermore, the input I got during conferences and meetings from Alfonsina Acito, Wolfgang Huemer, Michael Kubovy, Baingio Pinna, Toru Tani, Enrico Terrone, Fiorenza Toccafondi, Giuliano Torrenco is invaluable. Thanks to all of them. For reading, helpful discussions and/or general support in different respects, I thank my friends Marco Bazzan, Attilio Bragantini, Kyla Bruff, Nicole Canino, Carli Coenen, Raffaele Coppeta, Irene Delodovici, Bogdan Dzogaz, Jana Krutwig, Kentaro Otagiri, Nathalie Saouma, Andrea Schönbauer, Helmer Stoel, Hanna Trindade, Ad Vennix, Wawrzyn Warkocki, Thomas Wolfers and Susanna Zellini. I thank the Austrian Academy of Sciences, the University of Ferrara and FWF for financial support. I thank Robert Püringer and Ingeborg Lux from Austrian Academy of Sciences Press for our professional collaboration and Nicola Wood for her meticulous revision of the text. For her love, her care and support, her patience in going through the whole text and painstakingly pointing out what a supposedly *careful exploration* could not notice, as well as for her social and intercultural coaching, I warmly thank Elise Coquereau. She has always been the *socializer* to whom I look up.

This thesis is dedicated to my parents, Johann and Andrea Stadler, whom I thank for always being there and for never insisting on an answer to the often heard question of ‘what can you do with philosophy?’ They know that ‘what can you do without it?’ is the question that it makes more sense to ask in the long run.

Introduction with a Fictional Scenario

Though order never can be willed
But is the state of the fulfilled,
For will but wills its opposite
And not the whole in which they fit,
The symmetry disorders reach
When both are equal each to each,
Yet in intention all are one,
Intending that their wills be done
Within a peace where all desires
Find each in each what each requires,
A true *Gestalt* where indiscrete
Perceptions and extensions meet.

- W.H. Auden, excerpt from *New Year Letter* (1940)¹

In the Midst of Arnheim's 'Daily Paradise'

How to discriminate and yet create a bond between parts and their whole or between a whole and its parts is one of the oldest philosophical questions to meditate on. As an axiom to which I have never found a serious contradiction, we can state that everything is and can be a part of something, and everything is and can be a whole for something. There is nothing, except for some unprovable assumptions like indivisible physical atoms or an all-encompassing God, that cannot serve as an example for this axiom. Given that the philosophical question of parts and wholes is applicable to every domain of being, because part-whole structures are inherent among others to the (in)organic nature and the contents of experience, the syntax and semantics of language and the concepts of abstract thinking, the patterns of metaphysical speculations and the (dis)orders of everyday emotions, it is first of all an ontological question. It concerns all aspects of reality, which means that it is omnipresent and thus concerns reality itself. Parts and wholes, including their possible relations, are a fundamental part of reality, whereby reality should not be understood as a whole which is not and cannot itself be a part of a more comprehensive whole, e.g. of nothingness or becoming. Otherwise, the axiom would indeed be contradicted and another one would have to be defended, whereas it is rather something else that I want to defend as a thesis in this project.

I want to argue that ontology alone, i.e. the discipline that investigates the existence and the proper nature of entities taken *as* the entities they *are* and not as something different (for example as objects for scientific experiments), is insufficient to determine a fundamental aspect

¹Cf. Auden [1991: 200].

of the relationship between parts and wholes. The fundamental aspect of parts and wholes for which pure ontology is insufficient concerns their meaningful interplay, their dynamic ‘in-between’, their switching from one to another – what I will henceforth call, for lack of a better technical term, ‘part-whole oscillation’ (PWO). We will see that PWO has an ontological nature, which means that it is something special and important which is irreducible to and incomparable with anything else. But in order to determine this ontological nature, it is impossible to stay within the rationalistic limitations of formal thinking and a priori argumentation that ontology often consists in. I will demonstrate instead that what is needed to approach the reality of a dynamic and meaningful interplay between parts and their whole is an interdisciplinary opening of the discipline of ontology, or, more precisely, the inclusion of methods to study empirically perceptible phenomena in the conclusions that are drawn with ontological pretensions. Only then can we discover the omnipresence of a phenomenon that might be able to distinguish and yet account for the bond between parts and the whole, since, as we will see in the course of this project, in a purely formal, (onto-)logical reflection that does not take into consideration what is perceptually given, we cannot arrive at a complete picture of reality in its fabric of interconnected part-whole structures, which are often less conceivable than they are simply experienceable.

Although part-whole relations are everywhere, we do not always reflect on them. Most of the time, their ontological omnipresence is something taken for granted, something we automatically deal with and experience without surprise. For this obvious reason, before the sleeves are rolled up and the argumentative work of this project begun, it is important to gain some *awareness* of the philosophical question that is at stake. Without awareness as an unprejudiced and intuitive anticipation of the singular and often personal nature of a philosophical question, any confrontation with argumentative pros and cons is like being thrown in at the deep end. By providing the possibility of becoming aware of the not always unproblematic omnipresence of part-whole relations, I also want to touch upon my own personal commitment, i.e. my ‘motivation’ for reflecting on this topic, and in so doing, delineate the parameters which I think are the most important for an approach towards the determination of PWO’s ontological nature. Therefore, with the invitation to the reader with advanced philosophical knowledge about part-whole relations to jump directly to the roadmap below, let me begin by illustrating the significance of the subject matter by means of a fictional scenario. Compared to a random list of examples, a single comprehensive scenario can create a more efficient presentation of the topic we should become aware of. The scenario I would like to present is recounted in a passage of a text written by the art theorist and Gestalt psychologist Rudolf Arnheim. In his life, he wrote one single novel, which, unlike his influential theoretical writings, still remains untranslated and therefore, under the politically loaded label of German exile literature, almost unnoticed. The novel in question was written between 1936 and 1940. It is entitled *A Topsy-Turvy World. A Fantasy Novel*² and tells the story of a nameless young man who crosses two ontological borders, one at the very beginning and one at the very end of the book. He crosses these borders unintentionally, the first one as a result of inattentiveness and falling asleep, and the second one while holding the hand of a girl, thus out of love and the longing for communion.

The world in which he finds himself at the outset, after napping during a train ride, is like a

²The original German title reads: *Eine verkehrte Welt. Phantastischer Roman*. All translations from this book are my own.

selva oscura in which nothing makes sense and everything goes wrong: Children rule over their parents and teachers; the poor are dictating to the rich; the arising daylight indicates bedtime; the social order is rigid and mutual control is a virtue; disharmony and aggressiveness among the people are common place, and even material objects like furniture and houses are, as formless and soulless entities, subject to human demands. “Skew and contorted the contours were running, they bulged preposterously or narrowed into concaves, nothing adjacent harmonized, no single entity complied with a major form.”³ [Arnheim 1997: 270] It is a dystopian, hectic world in which laws are arbitrary and opaque, bodily pleasure is found in disgust or abstinence, privacy is despised and information is dispersed in order to confuse and intimidate. Nothing makes sense, nothing works out well, faces are covered with masks and the concept of peace is nothing but a dishonest ideal. Although the protagonist has to live through this chaotic world in which no single member shows any capability of forming a stable community with other members or things, he falls in love with a young woman who is a native of this land. Finally, after one of the story’s many fights between persons and families, she takes his hand and brings him to a land where this corrosive dismemberment ceases to disturb the positive lawfulness of the social and natural world.

This is the second ontological transition, and it is where my philosophical interest has been triggered each time that I read the last chapter called ‘Daily Paradise’ (*Tagesparadies*). To me it seems that what happens in this chapter is ontologically significant to such an extent that it will serve to mark the parameters from which the present project receives its bearings. It is ontologically significant, because it exemplifies the possibility of an ontological dimension of Gestalt-thinking, i.e. of the general idea that there can be a qualitative difference between a whole and the sum of its parts, such that the ‘supra-summative’ whole is primary to and determines the nature of its parts. In this way of thinking, the whole is then the Gestalt, and although it is composed of parts, it is characterized by a kind of homogeneity in the sense of order and conciseness (*Prägnanz*) that the parts do not have, neither in isolation nor as a sum. I always wondered, however, if the idea of a Gestalt does not make more sense if it is not just the whole that is of interest, but rather the perceptible and dynamic, *interconnecting difference* between whole and parts. Wherein could the nature of this difference, of this interplay between allocatable parts and an allocatable whole within one and the same Gestalt-entity, possibly lie? Unsatisfactorily, as we will see, most research in the Gestalt tradition has focused on the qualities a whole possesses whereas its parts do not, or vice versa, which accounts for the distinguishability of parts and whole. Also, most contemporary research on Gestalts stays within the empirical and cognitive realm, without drawing more general consequences of a philosophical scope. But granted that there are indeed wholes that are qualitatively different from the sum of their parts, then what might be the ontology of this interconnecting difference itself? With ontology, I mean less its *ontological status*, i.e. the loci and conditions of its existence, since it would take many scientists from different disciplines to answer this question, but rather the equally relevant *ontological nature*: What is this interconnecting difference, what is PWO in itself?

This question matters, because if parts and whole are both qualitatively discernible *and* at the same time make for one single Gestalt-entity, then there must be an interface or hinge between

³“Schief und gewunden liefen die Konturen, bauchten sich sinnlos aus oder verengten sich zu Höhlungen, nicht [sic!] Benachbartes stimmte zusammen, und kein Einzelnes fügte sich in eine große Form.”

the parts and the whole, a point x where both are able to be switched into each other and where, in a synthetic direction, the extra qualities of the whole appear or, in an analytic direction, they vanish and part-qualities might be glimpsed at instead. I will argue that it is not enough to just observe which kind of qualities a whole has and its parts do not, or vice versa, and conclude from there that a whole is somehow different and can be labelled as a ‘Gestalt’. We need to disclose the particular nature of this difference between the parts and the whole, this difference that both unifies and separates them. At this early stage, let me only hypothesize that the interplay of parts and wholes is not only an important and often overlooked aspect of Gestalt-thinking and other disciplines concerned with part-whole relations (in particular mereology), but that it could also be seen as a general, irreducible and creative feature of reality itself. In other words, my hypothesis is that a determination of PWO’s ontological nature can help to develop a more complete ontological framework that integrates this category of reality as one constitutive element among others. I will not develop such a framework here, because it would also have to deal with the ontological status of PWO. My sole interest lies in the nature of this category itself, not in its place within a system or a Theory of Everything. This category, to sketch it again in a preliminary way, is the energetic momentum between the parts and the whole. It is the *oscillation* preventing a Gestalt-entity being either reducible to its functional parts, or its being an integrative whole. It should be a dynamic and a creative category that allows for the existence of whole-qualities or part-qualities without thereby superseding the singularity of the other. Of course, all of this is vague now and will become clearer and better defined once I discuss relevant part-whole theories and distill from them the characteristics of PWO in the subsequent chapters.

For now, allow me to further create an awareness for this topic by encompassing this hypothesis with the help of the events that occur in Arnheim’s novel. They make me assume that Arnheim, who himself was a prominent figure of the psychological and aesthetic side of Gestalt-thinking, must have shared the assumption that what he elsewhere calls “the patterns of forces that underlie our existence” [Arnheim 2004: 315] are dynamic relations with their very own ontological nature. The first event in the story in which the ontological dimension of Gestalt-thinking is exemplified takes place just after trespassing over the border of this paradisiac reality. At this moment, the very first thing the protagonist becomes aware of is a tree, standing on the side of the road. Initially, he takes it to be a work of art, because its forms appear to be regular and perfected. While looking at it, he hears the voice of his girl: “‘Here, the arbitrariness ends’, she said, ‘and the realm of the law begins. [...] Out here, people do not rule anymore’, she said, ‘here, it is the law that rules.’”⁴ [Arnheim 1997: 271] Still under the spell of the overall disorder they are coming from, the protagonist asks, “‘But who can effectuate the law, if not humans?’”⁵ [id.], to which the girl responds, “‘The law rules in the things’ [...] ‘and out of the things it comes to us.’”⁶ [id.] Now, the protagonist takes a closer look at the tree, and what he sees effectuates a profound experience of reality in him. In the regularity of the tree, he observes an organic diversity of parts, a depth and balance among

⁴“‘Hier endet die Willkür’, sagte sie, ‘und das Reich des Gesetzes beginnt.’ [...] ‘Hier draußen herrschen keine Menschen mehr’, sagte sie, ‘hier herrscht das Gesetz.’”

⁵“‘Wer kann das Gesetz zur Wirkung bringen, wenn nicht Menschen?’”

⁶“‘Das Gesetz herrscht in den Dingen’, entgegnete, nach einem Augenblick, das Mädchen, ‘und aus den Dingen kommt es zu uns.’”

branches, birds and leaves, a manifold so unconstrained and yet quintessentially associated. Created out of this interplay of forms and life, the tree thrones almost proudly as one single, stable entity, and in return it provides each of its parts with an identity and function. It seems as if “augmentation and diminishment, acting and being, compensated for each other in a wondrous equilibrium.” [id.: 273] The contrast between this impression, as simple as it may be, and the previous disarrangement is remarkable, both for the reader and for the persons involved in the story.

The girl clarifies that marveling at this tree inaugurates the crossing of the border. After some time, while continuing their way through the borderland of this naturally organized realm of balanced cohesion, the protagonist notices more and more trees, and “the closer they converged, the more incomplete a single tree seemed in itself: The trunks were bending, the crowns were leaning heavily to the side, but looking from the one to the other and along the rows, the deviations of the single trees balanced themselves to a new unit, uniting the road. It seemed as if every tree sacrificed its completeness for not being alone; and in the wind they bowed to each other as if they engaged in dialogue.” [id.: 274]⁷ From this experience of nature as dynamically unifying itself on, the protagonist’s every perception becomes enriched with an interplay of parts and wholes, with an attribution of subjective qualities like loneliness and communicativeness, with a richness of external meanings and values. After some time, he also experiences this interconnected reality while observing animals, farmers, friends, couples and – finally – himself as being both an integral part of every such percept as well as one of the causes of the perceived integralities. Symbolically at the very end of the story, the masks of the two lovers disappear and at the same time, the singularity of their connectedness becomes evident: that, while intrinsically connected, both are still independent parts of their love and therefore cannot kiss each other. If they were to kiss, they would fuse and consequently lose their parthood. The wholeness they form together would cease to exist, because it would lack the parts it requires to do so. Enlightened by this insight, the protagonist states, “Never again do I want to go back to the other world.” The girls looks at him. “‘To the other world?’ she asks, ‘To mine – or to yours?’” “‘I don’t know’”, the protagonist answers confused and sorrowful, “‘I was only speaking generally’”.⁸ [id.: 289] At this point, the story ends, and the reader may wonder how their own world relates to the events and experiences described in the story.

With this scenario in mind, knowing that it comes from a literary text, above all one that is classified as a ‘fantasy novel’ by the author himself, it is indeed justified to doubt whether we can extract any truth from it for our own world, for the ‘real’ one, so to speak. The protagonist may not want to go back to his world, but are we, as philosophers and readers, allowed to verify his experiences by identifying them with experiences and structures we are actually confronted with in what we call our own reality?

⁷ “[...] je näher sie einander rückten, um so unvollkommener schien der einzelne in sich: die Stämme bogen sich, die Kronen neigten sich übergewichtig zur Seite, aber schaute man vom einen zum anderen und die Reihen entlang, so glichen sich die Abweichungen der einzelnen Bäume zu einer neuen, die Straße zusammenschließenden Einheit aus. Es schien, als habe jeder Baum von seiner Vollkommenheit geopfert, um nicht allein zu sein; und im Winde verneigten sie sich gegeneinander wie im Gespräch.”

⁸ “‘Ich möchte nie wieder in die andere Welt zurück’, sagte ich. Das Mädchen sah mich an. ‘In die andere Welt?’ fragte sie: ‘In meine - oder in deine?’ ‘Ich weiß nicht’, antwortete ich verwirrt und betrübt, ‘ich sprach ganz im allgemeinen.’”

It would be far from any intention of the present thesis to ignore the work of philosophers who elaborate and discuss such questions about the capability of literature for bearing propositional truths. J. Stolnitz, for example, confronts artistic truths with other kinds of propositional truths and concludes that “[a]rtistic truths are, preponderantly, distinctly banal. Compared to science, above all, but also to history, religion, and garden variety knowing, artistic truth is a sport, stunted, hardly to be compared.” [Stolnitz 1992, 200] P. Lamarque [2007] states that at a thematic level of a literary text (and less at the level of concrete contents, like the ones in Arnheim’s novel depicted above), there are ‘candidates’ for propositional truths in literature. However, he stresses the point that these candidates should be regarded as relevant only for the internal structure of the fictional text and not as propositional truth claims about the external world. J. Gibson [2003] holds the position that literary texts neither tend to argue in favor of a certain proposition they proclaim, nor are they (in accordance with Lamarque) able to overcome a thematic self-referentiality in order to generate knowledge about the real world. Therefore, the function of literary texts as bearers of worldly knowledge can be regarded as defective. To avoid literature falling prey to a sceptical point of view à la Stolnitz, however, Gibson thinks that it serves to acknowledge what we already know. According to him, literature can flesh out, bring to life, critically implement, make us experience and concretize the factual domain of knowledge we adopt via science, philosophy, and everyday experience.⁹ However, can we count an experience of unity in diversity, or of diversity in unity, such as described by Arnheim in his chapter ‘Daily Paradise’, among the factual domain of knowledge? Is it already part of our so-called ontological inventory before we read about it? Or is it just a kind of truth whose validity merely ranges over the world of the story and cannot be carried into the world we as readers live in? In short, what can we learn from this scenario?

At least from a commonsensical and purely descriptive point of view, it seems legitimate to assert that many a time we experience the world around us in coherent patterns, that is to say, in discernible wholes in which every part somehow contributes to the meaningfulness of the total impression. Be it in nature, while gazing at the life of a blooming tree or observing animals interacting with their environment, be it in our identification with a social group that determines our individual qualities and without which we, as individuals, would not possess and develop them, or be it in the perception of a painting whose beauty is due to its total composition in which every stroke and dot accentuate each other: Such experiences of part-whole interrelatedness are part of the everyday world we live in. At the same time, however, they tend to happen at a pre-reflective level due to the immersive nature in which we participate in them. A literary description of such an experience can be ‘true’ in the way it helps us to sharpen our awareness for situations in which reality or at least something real is experienced as unified, as a synthetic or integral unity, and as meaningful only through this act of somehow interrelating and ordering a diversity of single constituents. A literary passage like Arnheim’s, to say it in the words of C. Elgin, can help us in “[re]organizing a domain in terms of different kinds, highlighting hitherto ignored aspects of it, developing and deploying new approaches

⁹In Gibson’s own words: “Literature has a unique ability to present our world to us not as a mere conceptual object but as a living world. And it is thereby able to take what is dull, wooden, or tenuous in our understanding of how our words and our concepts unite us with our world and inject it with this essential vitality of understanding, returning our knowledge to us fulfilled.” [Gibson 2003, 236] He thereby draws on S. Clavell’s [1969] distinction between ‘knowledge’ and ‘acknowledgment’: We cannot know anything new by literature, but we can acknowledge what we already know about our world.

to it, and setting ourselves new challenges with respect to it [...]. Then categories need to be reconfigured, new lines need to be drawn.” [Elgin 2002, 3] Art can show us which experiences matter and are therefore worth exploring scientifically and philosophically.

In sharing Elgin’s view, I will continue this introduction by carving out the categories, i.e. the main parameters of the nameless protagonist’s situation when entering the ‘Daily Paradise’. His fictional situation will substantiate what Elgin, in drawing on a logical positivists’ distinction, describes as the ‘context of discovery’, “the realm in which the free play of ideas will be drawn.” [id.: 10] Furthermore and still following Elgin, the parameters from the context of discovery, which is at the same time the pre-reflexive context of many day-to-day impressions we encounter, will be connected in order to create a map of categories that will help us in finding philosophical ‘contexts of justifications’. Their task is to evidence what has initially been vague, immersive, undefined, fictional and, as such, simply ‘a free play of ideas’. In the course of the following chapters, we will see how this map of parameters can be gradually unfolded in order to reveal the ontological nature of PWO. To begin with, in making use of this interpretative freedom the context of discovery offers, it is the following four parameters that appear to be crucial for a philosophical understanding of the literary passage depicted above and whose appropriateness we may intuitively share: *experience*, *reality*, *part-whole* and *meaning*. Let me derive each of these cardinal points from the text one by one.

The Parameters Experience, Reality, Part-Whole and Meaning

Experience The protagonist enters the new land. He immediately becomes aware of a universal law that governs and organizes it. Firstly, this law is present in every sensual impression: in the visual field in which the tree, birds, more trees and later a whole farmland appear; in the audible percepts of birds’ twittering, voices and laughter; and in the cool smell of the forest that “was like a good morning dram.” [Arnheim 1997, 275] Thus, the protagonist undergoes an empirical awareness of sensory cues, all indicating some kind of natural organization. Everything he sees, hears and smells is enriched with instances of this singular law. Secondly, this natural organization appears to be like a work of art. Several of the protagonist’s empirical impressions are clearly accompanied by an aesthetic dimension: “Was it a tree? Or was it a work of art?” [id.: 271] Thirdly, he claims that he “senses”¹⁰ [id.: 274] the law, which is to say that he feels how his body as a whole – and not as partitioned into faculties like vision, hearing, etc. – awakes to it. This becomes clear towards the end of the chapter, where he and his girlfriend join a group of people who are engaged in farm work. Grouped together in a human chain, they catch and throw watermelons from one to the other. In order to become a functioning part of this chain of workers, he not only has to experience the object tactilely. The situation also demands the integration of his whole body. It is only by incorporating the ‘law’, by fusing with the surrounding situation, that the melon can be successfully caught and thrown.¹¹ Fourthly,

¹⁰“‘Ich glaube’, sagte ich, das Gezwitscher der Vögel übertönend, ‘ich glaube, etwas von dem Gesetz zu spüren, das ihr meint.’”

¹¹“‘Don’t try to command the ball – just help its swing!’ I understood; and by making it easier on myself and giving in more joyfully, by and by I felt myself to be a link of the chain: The arriving balls only touched my hands slightly and flew on almost of their own volition up to the girl [...]” – “‘Versuche nicht, der Kugel

this harvest of melons in which every co-worker participates as a functional part, uncovers a social experience of the same law that holds true of the whole ontological domain the chapter describes. Unlike in the previous events of the story, where the collapse of social bonds was looming at all times due to the incapability of the citizens to get consonant with each other, being social is now experienced as something positive and productive.

In addition, there is a fifth kind of experience, namely the experience of certain qualities that can be classified as emotive states and whose origin seems to lie both inside *and* outside of the experiencing person. The emotive states of the protagonist himself are epistemologically comprehensible. They arise from his empirical, aesthetic, embodied, and social perception of this world. The network of the tree's branches he perceives as "mysteriously pleasant" [id.: 273], the social cooperation yields a "desire" [id.: 287] to be with his girl, and looking at her for the first time without masks brings about a "deep shock" [id.: 288] in him. More surprisingly, however, the objects themselves also have such anthropomorphic qualities: trees can be lonely and communicative [id.: 274], mountains emanate "pain and joy" [id.: 281], and watermelons and plants seem to possess a palpable responsiveness to the way they are treated [id.: 285-7]. Whereas the former states could be reduced to acts of human consciousness, the latter are ascribed to exist in reality itself without having to be perceived in order to exist.¹² In short, there are different kinds of experience involved in the protagonist's encounter with the world he entered. Therefore, it is difficult to give a clear definition of *experience* at this point and, as with *reality*, *part-whole* and *meaning*, I prefer to classify it as a parameter that is open for finite yet varying possibilities of being bound in the context of a more embracing theory. Yet, while experience in this story may be empirical, aesthetic, embodied, social or (subjectively or objectively) emotive, it is always the same 'law' that is present and expressed in every such experience – and that was absent in all similar kinds of experience before the ontological transition in question.

Reality The second parameter of philosophical relevance delineates this ontological transition from one world into another. Although phenomenologically, the concept of 'world' has been strongly connected to the concept of 'experience' and in my opinion rightly so,¹³ it seems to be nothing less than reality itself that changed in this transition. As we remember from the last paragraph, every possible kind of the protagonist's experience points towards a certain law, a fundamental structure in the new world that demarcates it from the previous world. The protagonist has to learn to experience this law, to find adequate ways of approaching it with his senses and body, with his aesthetic and social, his emotive and axiological awareness. Furthermore, as the girl remarks, the law lies in the things and from the things it reaches out.

zu befehlen - diene nur einfach ihrem Schwung!' Ich verstand; und indem ich mir's leichter machte und vergnügter nachgab, fühlte ich mich allmählich als ein Glied der Kette: die ankommenden Kugeln berührten nur eben meine Hände und flogen wie von selbst empor zu dem Mädchen [...]" [Arnheim 1997, 287]

¹²This distinction is based on Tengelyi [2007: xi-xii; 15; 142-151], who calls the former kind of experience *Erlebnis* (experience reducible to acts of consciousness), the latter kind *Erfahrung* (experience irreducible to acts of consciousness). It is only in the latter in which the experiencing subject encounters something new and unexpected. Since the meanings of both words are covered by the English term 'experience', one should always be careful to clarify whenever one of the two meanings is intended.

¹³See Stenger [2008] for a historical survey of the notion of 'world' in pre-phenomenological and phenomenological contexts. See for the latter also Tengelyi [2007: 87-106]. David [2014] provides a very instructive philosophical and etymological history of the German word *Welt*.

Whatever this law may be – there is no explicit formulation of it to be found in the text of the story –, it has to be an ontological one, it has to be real and fundamental, because first, it exists independently of the person who experiences it, and second, it is universally present. Invariably it can be felt and detected everywhere. It is an existing law of being as such, without any urge to receive further specifications into restricted ontological subregions of this world: It exists, but *not only*, as a physical law prevailing in the watermelon; it exists, but *not only*, as a social law prevailing among the group of co-workers throwing the melon, etc.

On the one hand, I agree with Fulda [1987: 64], who stresses that the philosophical discipline of ontology has undergone an arbitrariness and uncertainty of self-definition during the 20th century due to its redeterminations by Kant and Hegel. Indeed, the term ‘ontology’ has been available as a discretionary label with which every theory dealing with something real or formal can be promoted, in particular since the “revival of a genuine interest in ontology” [Poli 2010: v] in the 21st century. On the other hand, I think that there is no need to speak of arbitrariness in relating the events happening in the story to philosophical research on existence and reality, thus to ontological questions like ‘what is there?’¹⁴ or “what *is* the world in its totality?” [Rickert 1934: 54]. Thereby the existence of *the* world as an overarching whole can be altogether refused, of course, but still on ontological grounds.¹⁵ However, although there may be no arbitrariness in subsuming the story’s description of inner-worldly structures and trans-worldly contrasts between such structures under the header of philosophical ontology, there still remains the uncertainty of how exactly, in what form, the experienced law is concretized among the different entities within the respective worlds. In other words, what is it at bottom that makes the protagonist want to remain in the world of the Daily Paradise; why does he prefer this ontological setting to the ones he experienced before?

Part-Whole To answer this question, an interpretation of this so-called ‘law’ is needed. We have seen that it is neither only physical, nor only social, and certainly not legally imposed. It is a universal law, a law of this world *as* a world, and as such it is to be experienced everywhere. Therefore, a simple comparison between the protagonist’s last experience before leaving the world in which he met his girl and his first experience of the world the girl takes him to should suffice to shed light on the nature of this law. Indeed, there is a remarkable difference between these two experiences in question. While lying on a hay wagon with which they escape from the former world, the protagonist throws a last glance at the houses receding in the distance.

¹⁴See Quine [1953] for one of the most influential depictions of this question.

¹⁵This ‘no-world-view’ has recently been defended by Gabriel: “To maintain that the world does not exist is to maintain that there is no overall focus. Another way of putting this is to assert that there is no such thing as *the* meaning of it all and that this is the reason why there is no such as *it all*.” [Gabriel 2015: 194] I sympathize with Gabriel’s ontological pluralism resulting from his view in any case, and it is safe to say that in order to experience reality like the protagonist in Arnheim’s story does, an ontological contrast is needed. This contrast is constructed both by the world the protagonist originally comes from (about which we only learn of its existence, but not its concrete contents) and the fantastical world he finds himself in at the beginning of the novel. All three worlds have different laws and meanings and there is no ‘overall focus’ from which the ontological contrasts between these worlds are combined into one all-encompassing law or meaning, into one determinable set that includes the other worlds. Even in one single world, there is no general point of view on it *as* a world, but only singular experiences in which the nature of this single world (the presence or absence of the ‘law’) manifests itself. Thus, presumably in accordance with Gabriel’s view, the ontological experiences involved in the story presuppose a certain pluralism of meanings and worlds, or of ‘fields of sense’, as he calls it.

It becomes clear to him how arbitrarily and irregularly they are built, thereby expressing the “narrow stubbornness of the inhabitants, who arrange their walls according to their mood and little insight, without respecting the whole as a part of which they lived.”¹⁶ [Arnheim 1997: 270] In reflecting on this discrepancy of parts and wholes, the protagonist finally feels “the discordance in their disunity, the silent war in their Gestalt [...]” [id.] Every entity appears to be self-satisfied, thereby misusing a certain contingency that enables it to not transcend itself towards something more comprehensive. Only a few moments later, however, this perception of parts and wholes as not belonging to each other is turned upside down in the first perception of the protagonist after entering the new world. When gazing at the boundary tree, the witness mark that inaugurates the law, it suddenly becomes clear wherein this law consists: in the actual necessity of correlation between part and whole. This universal and necessary law of part-whole correlation was absent before, whereas now, through this contrast, it is experienced in an even more intense fashion.

In fact, the correlation between parts and whole is both a terminological and an ontological one. The terminological explanation of this correlation is straightforward. “The words ‘whole’ and ‘part’ are normally used for correlative distinctions, so that *x* is said to be a whole in relation to something *y* which is a component or part of *x* in some sense or other.” [Nagel 1952: 18] Regarding the ontological level, Angelinus [1947] points out that the designation ‘part’ neither refers to the essence of an entity, because, for example, an arm as part of a body is something different than a sentence as part of a speech. Nor is ‘being a part’ merely one of an entity’s contingent qualities. How something can be a part of something else is different and can thus be predicated differently from case to case. There is no simple, univocal attribution called ‘is a part’. Instead, an entity can only be a part in relation to another entity, whereby the latter is a whole. “It seems that the being-a-part characterizes a thing not *in itself*, but only *in its relation to something else*.”¹⁷ [id.: 10] This can be taken as illustrated in the story we are talking about. A branch remains a branch, a tree remains a tree, the protagonist remains himself throughout the ontological transitions taking place. What changes is their relational becoming or failing to become a part of one or another encompassing whole: of a tree, a forest, a group of melon-throwers. Consequently, the concrete relation of the different parts to the different wholes is never identical. The relationship between the *ratio partis* and the *ratio totius* can only be understood analogically, or to be precise, as an analogy of proportion: a branch as a part relates to a tree as a whole like a tree as a part relates to a forest as a whole.

This relating to a whole, however, presupposes ontologically a certain incompleteness of the part and may effectuate epistemologically – in the case of the protagonist – the becoming aware of it. It seems that a self-sufficient entity, for which Angelinus uses the scholastic term “*substantia completa*” [id.: 12], thus an entity that does not need to develop any further because it is fully *actus* without any *potentia* left to be realized, cannot find completion in a whole, because it is already complete in itself. It seems that it can merely be added to other entities of this kind. The first world can be characterized as such an aggregate of self-satisfied entities

¹⁶“Nachdem ich erfahren hatte, wie unfriedlich und selbstsüchtig die Familien miteinander lebten, schienen mir die willkürlichen Grenzen der Behausungen den engen Eigensinn der Bewohner auszudrücken, deren jeder seine Wände so einrichtete, wie es seiner Laune und geringen Einsicht entsprach, ohne an das Ganze zu denken, als dessen Teil er lebte.”

¹⁷The original Dutch of Angelinus reads: “Het deel-zijn karakteriseert blijkbaar een ding niet *in zich*, doch alleen *in zijn betrekking tot iets anders*.” All translations from *Deel en Geheel* are my own.

without motivation for mutual completion. Everything is juxtaposed like elements added to a set. No mutual bonds are created for fear of forfeiting independence. If the set dissolves, nothing is lost. Personal autarchy finds expression in interpersonal conflicts and demonstrations of power towards inanimate objects. The ontological incompleteness of the latter is intensified by the repeated willful deformation effected by its citizens. However, the epistemological illusion the inhabitants of the first world fall prey to is that, from an ontological perspective, even entities that are self-sufficient in themselves can be seen as incomplete in relation to another. In keeping their own complete substance, they can still unite with other parts in order to form a greater whole and receive a supplementary completion, a surplus value, through this unification. "Through essentializing this new integrity together, the in themselves complete things become parts of a new unity; but then a unity of a different order, a mutual unity, a unity of relation."¹⁸ [id.: 13]

Accordingly, the ontological law we are looking for is simply the following principle: Both an ontologically incomplete *and* an ontologically complete entity can be enriched by committing their incompleteness in relation to something else. Everything and every person in the new world agrees with and therefore acts according to this universal principle. Gradually, also the protagonist learns to experience it, starting with empirical observations of the boundary tree's interplay of parts and wholes, continuing with the integration of his body into the group of workers and resulting in the final epistemological insight that if he kissed the girl, then both of them would lose the ontological completeness of relation they receive exactly by committing themselves to be incomplete parts of the whole they create. We can also say that in principle, independence and interdependence can go hand in hand. Now we only have to find out wherein the positive nature of this additional completeness lies, regarding the fact that everything could exist self-sufficiently without it and that, even in the new world, there always remains the freedom either of not experiencing the law, like the protagonist did in the beginning, or of acting against it, like he could do if he decided to kiss his female companion.

Meaning The benefit of the law the story tells about seems to lie in the bonus every entity receives for engaging in interdependence. This bonus lies in a certain surplus value a respective whole distributes among its parts. Otherwise, there is no internal motivation for committing to a relational incompleteness. The only non-motivational way in which parts can form a whole would be under compulsion. This is the case in the world the couple is escaping from. Here, the parts co-exist in agglomerations such as families, houses, schools, public places and celebrations. Although the parts, that is to say the persons but not the objects they are surrounded with, are ontologically complete in that they do not need and even refuse other parts in order to exist, they are forced to co-exist for the sake of social order. This social order is necessarily rigid and denunciatory, or else there would be too many conflicts among the mutually exclusive parts. The point is, however, that this order is completely arbitrary. Neither to the reader, nor to the protagonist does it make any sense. On the one hand, there is a strict social hierarchy with visible class markers and corresponding authoritarian modes of treatment. On the other hand, at the top of this hierarchy stands a queen who commands total

¹⁸"Doordat zij te samen die nieuwe volmaaktheid verwezenlijken, worden die op zich zelf geheel volledige dingen dan toch bestanddelen van een nieuwe eenheid; maar dan een eenheid van andere orde, een betrekkelijke eenheid, verhoudingseenheid."

equality of the citizens: Everybody has to wear a mask, nobody has a name. This inflicted hierarchization and equalization of the parts, which causes confusion and even more conflicts, stands in sharp contrast to the effects created by the ontological law of the world the couple escapes to. Whereas the wholes in the former world are simply meaningless aggregates and even afflict the substantial completeness of its parts, the wholes of the new world provide a surplus value to each part that is expressed in the latter's internal motivation for uniting without any external enforcement to do so.

The reasons why entities unite in the new world are thus not to be found in external constraints. Nor are they reducible to the individual nature of an entity, because, as we have seen, parthood neither applies to the essence of an entity nor to one of its qualities. Two or more things may not have any qualities in common and be completely different in essence, but they can still stand in a part-relation to the same whole. To use an example from the story, the physical momentum of a watermelon and the joy of co-workers throwing that melon belong as parts to the same experiential whole or overall situation, while what they are and how they are parts differ considerably. Instead, the surplus value they receive from the whole is the meaning they co-create as parts. In other words, it seems as if 'is meaningful' can only be directly attributed to the whole as an ontological entity in its own right (albeit not as a *material* entity, which we will see in chapter 2). Indirectly, the parts as parts and not as what they are apart from being a part are also meaningful, but always in relation to and thanks to the whole. This presupposes that, from an ontological point of view, the whole must exist prior to and independent of its parts because, as Angelinus points out, "the parts are made a part in a formal sense by the whole they form. But the whole is not made a whole in a formal sense by the parts due to which it exists, but by the unity it forms with the parts; and for this unity a whole does not rely on its parts, but on the contrary, because of its parts it would rather be a diversity."¹⁹ [Angelinus 1947: 42] Furthermore, a whole is always more complete than any of its parts, because being a part presupposes a relational incompleteness for which the whole as such is able to compensate, and this is only possible if it is more complete than the relationally incomplete parts. It is hard to imagine, however, that the existence of something with a higher degree of ontological completeness is composed of entities with lower degrees of completeness – although from a merely temporal point of view, both parts and whole are created simultaneously and neither can be said to have existed prior to the other.²⁰

Let us assume the plausibility of this argumentation for the sake of our philosophical interpretation of the story. When the protagonist looks at the boundary tree, he experiences not only that there are parts belonging to the tree, but it is the very motivation of the parts to unite in order to participate in the meaningfulness of the whole that becomes evident. Taken as such, the parts remain black birds and brown branches and green leaves. In the realm of what is known as primary and secondary qualities, there are no differences. What changes through their unification is that by committing themselves to be incomplete in relation to one another and therefore to a whole, they gain an additional value that elevates them ontologically,

¹⁹"De delen worden formeel tot deel gemaakt door het geheel, dat zij vormen. Maar het geheel wordt niet formeel tot geheel gemaakt door de delen, waaruit het bestaat, doch door de eenheid, die het daaruit vormt; en die eenheid heeft het geheel niet aan zijn delen te danken, integendeel, wegens zijn delen zou het veeleer een veelheid wezen!"

²⁰Cf. Angelinus [1947: 42].

but without thereby creating arbitrarily inflicted hierarchies. Rather, the meaning dispersed by a respective whole consists in an experiential composition which brings the parts together regardless of whether they are persons, animals, things or even emotive and abstract entities such as feelings or thoughts. “It seemed as if every tree sacrificed its completeness for not being alone; and in the wind they bowed to each other as if they engaged in dialogue.” [Arnheim 1997: 274] Thus, at least in the ontological setting of the story, an entity’s compensation for its relational incompleteness is not a different answer to the question ‘what is it?’, but to the equally ontological questions ‘why and how is it meaningful?’. Furthermore, an answer to this latter question can be found in a “not recalculating and for each deliberating view still convincing manner [...]” [id.: 272] The ontological meaningfulness as a whole’s tertiary quality from which every part receives relational completion is thus experienceable in different ways: empirically, aesthetically, bodily, socially and emotionally.

Yet, we still do not know if and how all of this is possible. In his novel, Arnheim does not give us any theoretical justification for the ontological law and the corresponding experiences in question. There are no passages to be found in which a narrator or the protagonist switches to a ‘thematic level’ from which the parameters we have extracted or any other philosophically relevant notions are elucidated. This may complicate the transference from the events happening in the story to our own world. Having said that, for any theoretical elucidation of our own everyday experiences of reality and us as inevitably included by it, we have no choice but to begin with the concrete contents and meanings that happen to be experienced, even if they initially seem to be inordinate and too individual to be generalized. Only gradually are we able to form a philosophical clarity in which basic categories and definitions, inferences and justified beliefs can come into effect and be discussed. Likewise in the philosophical discipline of ontology, such general yet intense intuitions as a story like Arnheim’s or our own perception of the world around us proffer are worth taking into account. This is especially the case if a philosopher takes ontology to be descriptive rather than revisionary.²¹ Whereas a revisionary ontologist attempts to reduce the universal categories of reality to a fundamental, often physical and not always intelligible principle by making use of, or at least drawing on, scientific approaches, a descriptive ontologist contents themselves with the factual given and respects intuitions at least as criteria of truth for or against ontological claims. Let us now draw a roadmap of how I will attempt, in the following chapters, to engage in descriptive ontology by transcending the discipline of pure ontology in favor of an interdisciplinary approach that starts out with a priori intuitions but then draws on what is factually given in empirical perception in order to determine the ontological nature of PWO.

The Roadmap

To repeat, the aim of this project is to give a convincing characterization of the momentum in which parts switch into a whole and vice versa: their dynamic ‘in-between’, their interface or hinge. This interface or hinge can be regarded as an oscillation, because it appears as a movement that sways between parts and whole within one and the same entity, thereby

²¹For an explanation of this difference see Strawson [1959: 9]: “Descriptive metaphysics is content to describe the actual structure of our thought about the world, revisionary metaphysics is concerned to produce a better structure.” Cf. for a critical analysis of this difference Löffler [2001] and Kanzian [2003].

making it the kind of entity it is. I will give many examples for this movement in the following chapters. Right now, I can only hypothesize, due to its universal scope, that this oscillation is an ontological category of reality, one whose structure comes very close to what is generally understood as a ‘Gestalt’. We will see in chapters 6 and 7 that many representative figures of Gestalt-thinking take the world as it is given, as it is perceived. If the idea of PWO actually implies an ontological category, which is hypothesized here, it has to be a descriptive and not a normative one. This will become clearer in the course of this project. What I have done so far was to provide a philosophical interpretation of a fictional scenario in which the experience of parts and wholes is crucial for the orientation in the world with which we interact. My intuition is that with the ontology underlying these events and by critically considering different theories on part-whole relations, we can describe certain aspects of our own reality as well in terms of meaningful part-whole interrelations. As a first step in this descriptive approach, I have highlighted four main parameters (*experience, reality, part-whole, meaning*) which not only result from the scenario of Arnheim’s story, but which could also describe a category of the reality or realities we call our own. These four inseparable parameters will therefore lead us through the upcoming investigation.

However, to adopt such a descriptive point of view and to determine PWO’s ontological nature based on the four parameters would be insufficient for the claim that in so doing, a complete ontological framework is presented. I do not make such a claim, because one category alone does not make a complete framework. Since reality is multifarious and never shows itself to one person in all its aspects, a complete ontological theory has to consist of multiple fundamental categories and has to be developed in interdisciplinary collaboration.²² Accordingly, the determination of PWO as an intersection of the parameters *experience, reality, part-whole* and *meaning* is only intended as an element or subframework for one or more theories that are more comprehensive and more collaborative. To that effect, I agree with L. Puntel that a complete theoretical framework cannot rely on one single theory or element alone, but is a whole, the substantiation of which goes hand in hand with the substantiation of its parts as subframeworks. “Any philosophical theoretical framework is highly complex; taken as a whole, each consists of numerous particular theoretical frameworks that are to be understood as stages in the process of the development of the complete systematic theoretical framework. At the outset, the philosophical theoretical framework is only quite globally determined, as including quite general elements (concepts, etc.). In the course of the systematic determination and concretization of the theoretical framework, new elements are added in such a way that, step by step, broader, more determinate, more powerful subframeworks emerge *as* more concrete forms of the general theoretical framework.” [Puntel 2010: 9-10] With the present project I want to compile in an argumentative and interdisciplinary fashion a subframework for a more comprehensive theoretical framework of reality, regardless of whether the latter is yet to come or already existing and open enough for the implementation of new elements. Thus, neither what will follow nor what it is intended for can be or should be a closed philosophical system, but is and should rather be, as it were, a cooperative ‘open source’ project.

²²Here I agree with Poli [2002: 661], who writes that “ontology needs the contributions of mathematicians, logicians, linguists, psychologists, social scientists and philosophers. Collaboration with philosophers is possibly the most difficult. [...] Ontology needs the achievements of all the sciences if it is to accomplish its aims.”

At present, even the sub-framework is ‘only quite globally determined’. I have derived four different parameters from a fictional scenario and decided to organize the ontological determination of PWO around them. I claimed that they bear ontological importance for how different aspects of reality are often experienced as being meaningful both for us and in themselves via a relational movement between parts and whole. Furthermore, the one-by-one derivation of the parameters made clear that not only in the story, but also in a preliminary approach of theorizing about *experience*, *reality*, *part-whole* and *meaning*, it is hard to avoid reflecting on one of these parameters without referring to another one. In any concrete setting in which something or somebody is involved as a part, the immediacy of it does not allow any isolation of either the meaning every part receives through partaking in the whole, the reality *in* and particularly *as* which the setting takes place, or the kind of experience at play. More often than not, everything happens at once and is factually given *en bloc*. In playing football, for example, we may see and hear the other players as parts of the game, feel how our body is constantly re-positioned during the ever-changing constellation of the parts on the field, and experience what it means to rely on other players in order to be or not to be successful. Without hesitation, we commit ourselves to the existence of rules, norms, techniques as well as spatial and temporal boundary conditions without which the whole situation would not function.

This is how everyday, pre-theoretical and pre-reflexive ontology occurs in many cases, namely as ‘being-in a more or less meaningful whole with distinguishable parts’, whereby we can switch from the whole (the match, the field) to the parts (the players, the ball) and back without problem. However, even a preliminary description of one of these parameters reveals their own relational incompleteness: What is experienced? What is taken to be real, to be meaningful, to be a part or a whole? Just as south has no significance without north, every parameter of the frame points beyond itself in order to be understood. If we do not take the heuristic freedom of correlating our parameters instead of isolating them, the determination of PWO remains as arbitrary as any proposition about a phenomenon that is analyzed while the rest of the world it normally relates to has been bracketed. To use Elgin’s words, we need to draw lines between our categories to develop – with Puntel – subframeworks for the overall theoretical framework we seek. Whereas with this subframework, I focus on *one* possible category of reality and determine *only* its ontological nature,²³ a complete and systematic theoretical framework would comprise several fundamental categories (reality consists of much more than part-whole structures) and determine not only their ontological nature, but also at least their ontological status and perhaps their normative or revisionary implications. Every serious attempt to develop such a complete theory of everything is a mammoth project and cannot succeed without interdisciplinary teamwork. I believe that as a contribution to such a future project, an unbiased and original approach to the complex of problems concerning the relations between parts and whole is fruitful. But in order to achieve this, it is necessary to interconnect and bind the parameters by turning to concrete methods and research findings of different disciplines in which their presence or absence play a significant role. To show in which lines this will be put into effect, the following roadmap indicates the different stages,

²³Towards the end of the second chapter, I will argue that for certain reasons a third limitation of the sub-framework is required, namely a concentration on the empirical-cognitive domains of language and perception. This third limitation indicates the transcendence of ontology proper towards disciplines the methods and objects of which traditionally do not seem to fall into its purview.

ordered in chapters and sections, in which this project aims to engage in the development of the subframework that comprises the ontological nature of PWO.

1. Any serious research, regardless of the scientific discipline, should reflect on its methodology and determine its method(s) before it is carried out. Therefore, I will begin with a meta-ontological chapter on the most appropriate way(s) to approach the determination of PWO's ontological nature.
 - 1.1 What are proper methods of the discipline of ontology with which to carry out the present project? By drawing both on a classical text by J. Hessen and on I. Kant's distinction between *quaestio facti* and *quaestio iuris*, I adopt two different research methods: a *deductive* method of formal ontology in the domain of a priori reasoning and an *inductive* method of experimental ontology in the domain of empirical perception.
 - 1.2 This section specifies the advantages and disadvantages of the deductive method.
 - 1.3 This section specifies the advantages and disadvantages of the inductive method and divides this method into an 'ordinary language' and an 'experimental' aspect.
 - 1.4 A brief recapitulation and summary of the chosen methods.
2. The second chapter approaches the research object with the deductive method, for which E. Husserl's formal part-whole ontology that he develops in the 3rd of his *Logical Investigations* forms an ideal source text.
 - 2.1 Before turning to Husserl, I start out with some brief remarks on how formal ontology should be understood within this project.
 - 2.2 This section then gradually introduces Husserl's part-whole ontology in several subsections, with a particular focus on the possibility of PWO.
 - 2.3 It appears, however, that the idea of PWO is contradictory and incoherent in pure (onto-)logical terms, while it might make sense in the empirical-cognitive realm towards which Husserl points, yet without going there himself.
3. In the third chapter, I reflect on two at first sight plausible lines of argumentation. On closer examination, however, both lines of argumentation would form a dead end for the further determination of the research object.
 - 3.1 Contemporary theories on mereology and composition are not suitable, because they usually presuppose a physicalistic account of independent parts and summative wholes, whereas PWO involves an experiential account of dependent parts and supra-summative wholes.
 - 3.2 Another way to continue would consist in turning to Husserl's linguistic 4th *Logical Investigation*. However, instead of considering natural languages with an empirical basis, Husserl strives towards an ideal language based on his formal ontology, in which there is no possibility for PWO.
4. The fourth chapter attempts to realize the first aspect of the inductive method by determining the ontological nature of PWO in the domain of ordinary language. To do so,

- I discuss approaches from cognitive linguistics, in particular the seminal research of M. Johnson (often co-authored with G. Lakoff) on conceptual metaphor.
- 4.1 The first section of this chapter discusses Johnson's understanding of meaning and embodiment on which his more specific linguistic analyses of conceptual metaphors rely. In particular, his denial of body/mind/world dichotomies provides a plausible ontological basis both for PWO's function in language and in empirical perception.
 - 4.2 What are conceptual metaphors and is PWO one of them? After a series of arguments, the answer to the latter question is 'no'.
 5. The fifth chapter re-attempts to realize the first aspect of the inductive method by elaborating on the cognitive linguistic notions of image schemata and conceptual metonymy.
 - 5.1 Although PWO is not a conceptual metaphor, Johnson's and Lakoff's postulation of image schemata includes a schema for part-whole structures which not only influences conceptual metaphors, but is also vital for conceptual metonymy.
 - 5.2 What are conceptual metonymies and could their underlying structure be constitutive for the determination of PWO's ontological nature? The answer to the latter question is 'yes'.
 - 5.3 In the course of summarizing the research results of the fourth and the fifth chapter, I suggest three determinations of PWO's ontological nature for the empirical domain of ordinary language.
 6. After this first positive determination of PWO in terms of conceptual metonymy, the sixth chapter takes up the second aspect of the inductive method by turning to empirical experiments on Gestalt perception. The dominant question in this and the next chapter concerns the notion of the ontological primacy of a whole/parts over parts/a whole and their one-sided or two-sided dependency relations.
 - 6.1 A brief introduction to certain aspects of Gestalt theory with a motivation for giving an interpretation of some of its ontological aspects. The discussion of conceptual metonymy made clear that we need a theory of Gestalt perception which postulates an interdependence of parts and whole.
 - 6.2 Not all reflections on Gestalts entail part-whole interdependence. On the one hand, C. von Ehrenfels defends a position according to which a whole can be said to one-sidedly depend on its atomic parts.
 - 6.3 On the other hand, I introduce major thoughts in this regard from the Berlin School of Gestalt theory and their general stance towards the one-sided dependence of parts on the whole in which they appear.
 - 6.4 How to proceed from Ehrenfels' part-primacy and from the Berlin school's whole-primacy to a model in which there is no one-sided primacy of either parts or whole?
 7. In the final chapter, I focus on the development of a perceptually meaningful, interdependent and dynamic part-whole structure on the basis of contemporary literature on Gestalt perception and emergence. The four sections of this chapter result in four determinations of PWO's ontological nature for the empirical domain of perception.

- 7.1 To begin with, B. Pinna's research on perceptual meaning as 'happening' in Gestalt perception offers a promising account of perceptible part-whole structures in which there is neither an ontological primacy of the parts, nor of the whole.
- 7.2 J. Koenderink's ideas on the perceptual acts of *splitting* and *merging* within the context of *visual awareness* can be seen as an elucidation of Pinna's account of perceptual meaning.
- 7.3 What is missing in both accounts, however, is a clarification of the concept of emergence. How does a whole with supra-summative qualities emerge out of its parts? How do parts with qualities not shared by their whole emerge out of their whole? By considering recent literature on emergence, I suggest a model of emergence-demergence for the determination of PWO.
- 7.4 Such a model, which is already implied by perceptual meaning as (well as) splitting/merging, requires a hierarchy of parts and whole that is not unchanging, but reversible and flexible instead. Therefore, I turn to multistable figures, including ambiguous figure-ground phenomena, and apply their inherent flexibility of hierarchical patterns to interdependent, perceptually meaningful part-whole structures (PWO).

Finally, the 'Conclusion' consists of a (self-)critical review of the line of argumentation, with additional conjectures on the subject matter to suggest further research and point out desiderata in my argumentation. To this end, I list and derive the determinations of PWO's ontological nature developed in the course of this project and combine them into one single characterization, which can serve as a kind of building block for more comprehensive ontological frameworks.

1 A Twofold Method for Ontology: Thinking and Perceiving

1.1 The *Quaestio Facti* and *Quaestio Iuris* of Meta-Ontology

The aim of this project is to arrive at a theoretical framework that is able to determine the ontological nature of what can be called ‘part-whole oscillation’ (PWO). Such a theory would therefore be an ontological theory. For now, I hypothesize without proof that PWO is real and that it can be experienced. An ontology dealing with the realness of PWO thus has to presuppose that reality and experience are combinable instead of exclusive, and it also should make use of an appropriate method to justify this presupposition. Without an elucidation of this presupposition and its consequential method, we cannot proceed. Hence the task of the first chapter is to discover and to critically integrate methodical approaches according to which reality and experience are combinable in order to proceed with the determination of PWO’s ontological nature.

Reality in general and the reality of an entity in particular are studied in the discipline of ontology. Formulated in a nutshell, ontology is the discipline that studies reality or “Being as such” [Harper 1879: 62]. It asks what is real, what it takes for something to be real, and what “the most general sorts of things that the World ‘contains’” [van Inwagen 2009: 277] could be. When we ask for the combinability of reality and experience, we ask for the possibility of using some kind of experience for the acquisition of ontological insights. Initially, this is not an ontological question, but a question about ontology itself, about what ontology is, how it should be carried out and which claims it can make. It is therefore a meta-ontological question. For example, whereas in ontology we may determine ‘what there is’, in meta-ontology we can reflect on the nature of this determination itself: “What are we asking when we ask ‘What is there?’” [van Inwagen 1998: 233] Meta-ontology can also discuss the viability of some philosopher’s “approaches to ontology” [Eklund 2006: 317] and, in general, the importance and independence of ontology as a discipline with a genuine subject matter,¹ especially considering

¹Cf. on this point L. Kolakowski’s compelling essay *Metaphysical Horror*. “Why, indeed, do so many philosophers devote their efforts to refuting the idea of solipsism and to proving that ‘the world exists’, given, firstly, that nobody has ever seen a deeply convinced and consistent solipsist and, secondly, that it seems to make not the slightest practical difference whether the world exists or not? Why should we be dissatisfied with the commonsense distinction between dreams and illusions on the one hand and the normal, that is, the universally shared, perceptions on the other and look instead for a method whereby we could convince ourselves that the universe we perceive is not a figment of imagination after all, but includes a sort of ‘hard’ reality? [...] Retrospectively - and speculatively, of course - we can understand why metaphysical questioning appeared, and even why it would have been strange if it had not. The source of our passionate search for ‘reality’ is our fragility which God or nature could not have prevented us from experiencing once he - or she,

its close relationship to metaphysics² and its traditional role as ‘general metaphysics’.³

Another important meta-ontological question concerns methodology. When ontology makes use of certain methods, it is meta-ontology that questions these methods or that provides an explicit methodology with which the ontological methods in question can be justified. This methodological aspect of meta-ontology is essential for the investigation into the combinability of reality and experience, because whether we may draw on experience to say something about reality implicates the type of method that is appropriate for making ontological claims. An ontological method can draw on experience or not in order to result in an ontological theory. Which kinds of experience (e.g. empirical perception, aesthetic and mystical experiences, emotions and social interactions) an ontological method may draw on does not matter for the moment. It applies for any meta-ontological methodology, ‘experience-friendly’ or not, that it should be able to provide conclusive explanations for two simple criteria. Firstly, it should succeed in explaining how its method can *detect and derive* ontological information (e.g. categories, norms for existence, general structures) from reality. Where, i.e. from which region of reality, does it draw them? How precisely are they attained? Why these and not others?

Secondly, it should be able to explain how this information, once it is spelled out into a theory or model, can be applied to reality for the sake of *verification and justification*. How do the derived categories, norms, or structures match the entities they are about? This last point is important, because an ontological model that is, by definition, about reality is hard to justify when the reality we actually live in does not provide any evidence for the truth of the model’s claims. Why should anybody give credence to the model, if it may be internally consistent, but is inconsistent with what it is actually about? This aspect is closely connected to the orientation an ontological model might provide. How should this model be used? How does it help us in better understanding reality and ourselves therein? For whom is it designed and who is, due to a lack of philosophical, scientific, logical or cultural background, implicitly excluded from the benefits it may bring? Such questions may appear naive, but I think that, at the end of the day, they are (co-)decisive for the longevity and persuasive power of a single ontological model and thus for ontology as a reasonable endeavor in general.

The two methodological criteria an ontology’s meta-ontology should be able to fulfil resemble the juridical distinction between a *quaestio facti* and a *quaestio iuris*. These questions ask for the factual and legal position of a situation or act. The *quaestio facti* is mainly interested in the nature of the situation or act itself. It wants to know which situation or act is the case and why and how it came about. The *quaestio iuris* presupposes familiarity with the object of the *quaestio facti*. Only by drawing on this knowledge, can it ascertain the legitimate way to relate to and judge about the given situation or act. It is important for our methodological criteria that this distinction found its way into Kant’s *Critique of Pure Reason*. In the beginning of the second chapter of ‘The Transcendental Analytic’ (‘On the Deduction of the Pure Concepts of the Understanding’), Kant states that we have a plenitude of categories in our mind with which we can perceive and think about the empirical world around us. For most of these categories,

or they - had endowed us with the power to express in language both the distinction between illusion and non-illusion and the uncertainty of our life.” [Kolakowski 1988: 1

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²Cf. Varzi [2011].

³Cf. Vollrath [1962].

we can always draw on the facts of empirical experience to verify or falsify them. They do not need any further proof for their relatability with the outer world. As they are “acquired through experience and reflection on it” [Kant 1998: A85/B117], the *quaestio facti* of a given situation or act is sufficient for the determination of their existence.

However, there is a group of categories with which we likewise engage in the empirical world. The existence of this group does not depend on what we may or may not perceive with our senses. The twelve categories in this group, such as causality, existence and substance, are factually and logically there. In our obvious possession of them, they provide as positive a response to the *quaestio facti* as the empirical categories do. Instead of being created a posteriori (*after* and *due* to our empirical experience), however, they exist a priori (*before* and *independent* of our empirical experience). Therefore, their appropriateness cannot be justified by our engagement with the world around us. Their “birth certificate” [id.: A87/B119] has to be deduced from elsewhere, namely from the thinking subject themselves. Kant calls this the ‘transcendental deduction’. This deduction is less about the fact that these categories exist. We basically know that they exist, because we apply them constantly. This deduction is rather about the justification of their relatability to the empirical objects around us. It is “a deduction of their entitlement” [id.]. Kant has to legitimate how some categories, which are supposedly experience-independent, can connect with the empirical world from which, on the one hand, these categories cannot be derived, but solely with which, on the other hand, they can create knowledge (*Erkenntnis*) for the bearer of these categories, i.e. the thinking and perceiving subject. Otherwise, these categories would be empty and their application unfounded.

How exactly Kant answers the *quaestio iuris* is a complicated matter and does not concern us here. Apart from his concrete answer, however, there is a twofold meta-ontological importance to his use of the terms *quaestio factis* and *quaestio iuris*. Firstly, it is worth noticing that Kant himself makes use of this distinction exactly in line with how I think it can be helpful for the methodological aspect of meta-ontology and thus for the question of how experience and reality can be combined. In a certain sense, by demonstrating and justifying the transcendental categories that are, according to Kant, universally and objectively relatable to reality, Kant engages in a meta-ontological activity in order to establish ontology, i.e. general metaphysics, on ‘scientific’ grounds. This is what the chapter ‘The Transcendental Analytic’ is all about, in which Kant states that the dogmatic claims former ontologists made about reality by using a priori categories could never be proven in reality itself. They could never answer the *quaestio iuris*, because empirical reality – the only reality we have access to – neither confirmed, nor denied the lawfulness of these categories. As, therefore, no *transcendent* deduction, originating from reality itself, is possible for their justification, Kant undertakes a *transcendental* deduction, originating from the thinking subject.

The main result of this latter deduction is that ontology is only possible if we analyze the categories not as belonging to reality as such (about which we will never know anything positively), but as presupposing the objectivity of what we perceive as appearance of reality via our senses. In Kant’s own words: “The Transcendental Analytic accordingly has this important result: that the understanding can never accomplish *a priori* anything more than to anticipate the form of a possible experience in general, and, since that which is not appearance cannot be an object of experience, it can never overstep the limits of sensibility, within which alone objects are given to us. Its principles are merely principles of the exposition of appearances, and the

proud name of an ontology, which presumes to offer synthetic *a priori* cognitions of things in general in a systematic doctrine (e.g., the principle of causality), must give way to the modest one of a mere analytic of the pure understanding.” [id.: A246-7/B303]⁴ So it appears that Kant himself uses the distinction between *quaestio factis* and *quaestio iuris* for the development and justification of a new kind of ontology, methodically conducted not by an analysis of reality itself, but of our internal categories (as well as our forms of intuition: space and time) with which we can understand reality in the most general and objective manner. My suggestion of using this distinction for meta-ontological purposes is therefore, hopefully, not far-fetched.

The second meta-ontological importance for our question of how reality and experience are combinable lies in the influence of Kant’s notion of ontology as primarily involving conceptual analysis. As we cannot have verifiable access to reality itself, it is more profitable to direct our attention to the internal concepts with which we can reflect on what appears to us as reality. Direct empirical experience is only of a minor significance here. What counts are the general concepts that we normally find hidden in natural language and exposed in logical language. In her 2010 article ‘A New Role for Experimental Work in Metaphysics’, L. Paul points out that this notion of ontology was very influential both in the first half of the 20th century for Logical Positivism and Neo-Kantianism, and in the second half of the 20th century for analytic ontology. We can call this approach of tackling ontology through conceptual analysis ‘conceptual ontology’. It is synonymous with what B. Smith calls ‘internal metaphysics’.⁵ One characteristic feature of conceptual ontology is that, very much in the spirit of Kant’s ‘Copernican revolution’, reality has to conform to the concepts with which we think and make judgments about it. As Paul puts it, conceptual analysis consists in “determining what it is necessary for things in a world to be like in order for the metaphysical concept to apply to them. [...] For example, one might hold that when our philosophical and scientific concepts are successful (in some suitably defined sense) they pick out the things they describe in our world.” [Paul 2010: 463] Accordingly, a conceptual ontologist *deduces* what can be accounted for as being the nature of reality. They arrive at this conclusion by taking as a premise the plausibility or logical consistency of the concepts that are held to be appropriate for this purpose.

There are ontological methods for which some kind of experience is constitutive and there are ontological methods for which no kind of experience is constitutive. On the one hand, conceptual ontology, with its method of deducing ontological truths from concepts, is not dependent on any kind of experience. On the other hand there are, according to J. Hessen’s remarkable 1955 book *Die Methode der Metaphysik*, at least two other methods besides the *deductive* method that an ontologist or metaphysician can operate with: an *inductive* method and an *intuitive* method. Although these two methods presuppose a very different understanding of experience, their foci are adjusted to an experienceable form of reality itself instead of inborn concepts of our mind. While the inductive method draws on intersubjectively verifiable or falsifiable

⁴Of course, the literature on Kant’s renewal of general metaphysics is enormous. For a detailed explanation and the historical background of his ontological project in ‘The Transcendental Analytic’ cf. for example Longuenesse [2006], in the prefaces to the *Critique of Pure Reason* cf. Herrmann [2010], and in the *Critique of Pure Reason* in general cf. Ficara [2006].

⁵“According to these thinkers [of internal metaphysics, M.S.] ontology is a meta-level discipline which concerns itself not with the world itself but rather only with theories or languages or systems of beliefs. [...] Traditional ontologists are seeking principles that are true of reality. The practitioners of internal metaphysics, in contrast, are seeking to elicit principles from subjects or theories.” [Smith 2004: 157]

empirical perceptions, the intuitive method approaches the ‘true’ nature of reality by means of an individual’s singular and profound experiences. Such experiences have been referred to as ‘ontological’⁶, ‘metaphysical’⁷ or ‘transcendental’⁸. Despite their transformative and, thus, personal nature, they have in common that without anticipating it, suddenly something in the way you see reality fundamentally changes. Instead of just perceiving things and relations in reality and thinking about them, you become aware of the strange ‘thing’ reality is itself. This does not have to be a mystical or religious experience, although it can point in this direction. It is, rather, a kind of non-empirical experience of reality as being what it is just because it is, and a non-conceptual insight into what reveals itself suddenly as the inner nature of reality. The ontologist L. Lavelle describes this experience as the feeling of Being’s ‘total presence’ and self-revelation to the experiencing subject.⁹ It is as if the experiencer receives some kind of revelation by her ontological intuition, as if she has some gnosis of the essence of all things, what M. Scheler calls *Wesenserkenntnis*, which is valid “above and beyond the Being that affects our senses directly or indirectly.” [Scheler 1995: 251]¹⁰ In so doing, we could say that the subject that draws ontological insights from the intuitive method calls for what Kant refers to as an *intellectus archetypus* rather than what a human being usually embodies: a finite *intellectus ectypus*.¹¹

⁶Cf. Albert [1974], who lists several characteristics of an ontological experience. He holds that it is an experience of the opposition between Being and Nothingness, of the unity of all that is, of pure presence, of a religious nature, and of one’s own consciousness beyond any linguistic expressibility. Fink [1958: 52], on the other hand, emphasizes the importance of language when it comes to the astonishment about why there is something rather than nothing. In Fink [1977], he interprets Hegel’s dialectical philosophy in the context of this aspect of the ontological experience and in his article ‘Zum Problem der ontologischen Erfahrung’ [2004], he interprets Heidegger’s [1955: 21] famous question “Warum ist überhaupt Seiendes und nicht vielmehr Nichts?” in the light of this experience.

⁷Cf. Weischedel [1960], who describes this experience as if one “gets overpowered and deeply moved” [id.: 110] by the sudden insight that Being and the reason behind it (*Seinsgrund*) are themselves questionable. They present their inner nature directly to the experiencer, which makes the experience itself something “first and irreducible” [id.].

⁸Cf. Irlenborn [2004].

⁹This act of the self-revelation of Being in the present moment is beautifully described in passages like the following: “On voit maintenant à quel point la présence de l’être élève celui-ci au-dessus de la pure abstraction. La présence est une expérience du tout, ou plutôt elle est le caractère qui nous donne, dans l’expérience de chaque objet, un contact immédiat avec le tout. Elle fait de la notion de l’être une notion vivante. *Car l’être ne peut pas être distingué de sa propre révélation.* Il est bien, si l’on veut, une donnée, mais qui se donne à elle-même, une totale et mutuelle présentation de soi à soi qui n’est possible que parce que l’être est un acte : il se réalise éternellement par l’infinité des états qui remplissent toutes les consciences particulières ; l’état n’est lui-même qu’un acte imparfait et interrompu dont tout le monde voit que, dans sa réalité actuelle, il est encore éclairé et enveloppé par un acte qui non seulement le soutient et le dépasse, mais encore l’actualise et le fait être.” [Lavelle 1934: 196]

¹⁰My own translation. The original passage reads: “Nur wenn es Wesenserkenntnis gibt, und zwar auch Erkenntnis materialer Gegebenheiten und ihrer Strukturzusammenhänge, kann es auch eine Erkenntnis geben, die unabhängig ist von dem Zufall der sinnlichen Erfahrung und die hinaus und hinüber gilt über das direkt oder indirekt unsere Sinne affizierende Sein. Nur wenn es Wesenserkenntnis gibt, können ferner die Seinsarten und die Ganzheitsstruktur der Welt freigelegt werden.”

¹¹In his *Critique of Judgment*, Kant makes a distinction between *intellectus ectypus* and *intellectus archetypus*. The *intellectus ectypus* denotes the conceptual and finite understanding of every perceiving and thinking subject. In order to gain knowledge (*Erkenntnis*), this understanding depends on empirical sense data that are given as a contingent manifold of unconnected parts. The transcendental categories of our understanding synthesize these empirical data to a unity, thereby representing “the possibility of the whole as depending upon the parts” [Kant 2000: 277]. On the other hand, an *intellectus archetypus*, which is only an ideal and in Kant’s view not attributable to any human being, intuitively reality without the mediation of the categories of

For several reasons, however, I will not apply this ‘method’ to the determination of PWO’s ontological nature. Firstly, Hessen himself classifies the intuitive method as inappropriate for any serious engagement in metaphysics/ontology, since, according to him, metaphysics “wants to be a science. But all science relies on the ratio. Therefore, it is impossible to construct a metaphysics by way of intuition. [...] As a science, metaphysics draws upon universal validity in the sense of provability, logical enforceability. The content of intuition withdraws from any demonstrability. Were intuition to be the actual method of metaphysics, then metaphysics would lose its quality as a science, i.e. its claim of universal validity.” [Hessen 1955: 30]¹² Secondly, even if we free ontology/metaphysics from the expectation that it has to be scientific in order to be a serious discipline, we still can agree with N. Melchert. In his article ‘Mystical Experience and Ontological Claims’ he argues convincingly against any inference from the experienced unity of subject and reality, which is essential for the ontological experience, to the ontological claim that there is an objective identity of thinking and reality. This conclusion may be true, he concedes, but it cannot be arrived at via an inference from an ontological experience alone.¹³ And thirdly, there is a simple reason why excluding the intuitive method from further research into the ontological side of dynamic part-whole structures is unavoidable. Since a fruitful application of the intuitive method presupposes a personal familiarity with ontological experiences, and since I do not want to claim to have had any such familiarity, it is impossible to either benefit from my own or evaluate other’s insights gained by such an approach towards reality.¹⁴

Therefore, what I would like to do in the next two sections is to delineate what the *deductive*

the understanding. It also does not depend on sensuous, i.e. empirical perception for the kind of intuition it is able to avail itself of. Rather, an *intellectus archetypus* is assumed to *see* reality as such and immediately as totality and in one single glance, in “uno actu intellectus” [Cassirer 2011: 64].

¹²My own translation of the original: “Metaphysik will doch Wissenschaft sein. Alle Wissenschaft aber beruht auf der ratio. Folglich geht es nicht an, mittels der intuitio eine Metaphysik aufzubauen. [...] Als Wissenschaft erhebt die Metaphysik den Anspruch auf Allgemeingültigkeit im Sinne von Beweisbarkeit, logischer Erzwingbarkeit. Der Inhalt der Intuition entzieht sich aber aller Demonstrierbarkeit. Wäre also die Intuition die eigentliche Methode der Metaphysik, dann würde diese damit ihren Wissenschaftscharakter, d.h. den Anspruch auf Allgemeingültigkeit, einbüßen.”

¹³Melchert’s argument is analogous to Kant’s argument against rational psychology that attempts to infer positive characteristics of the ‘I’ from the formal ‘I think’ that accompanies all sensuous experience. “Just as the rational psychologist tried to infer the substantiality, simplicity, etc., of the soul from the characteristics of the ‘I’, so the mystical psychologist tries to justify the nonindividuality of the self from the absence of the ‘I’ in unitive experience. But that is a move from a logical characteristic of the concepts in terms of which this experience is explicated to a conclusion about the real nature of the experiencer. And that is a mistake. The conclusion *may* be correct. Perhaps we *are all* Brahman [absolute, unchanging reality, M.S.]. But it cannot be a simple inference from the nature of unitive experience.” [Melchert 1977: 453] The mere occurrence of an ontological experience does not allow for the derivation of universal ontological categories, such as identity-claims or, in the case of the present project, PWO, from it.

¹⁴To make this point clearer, I agree with R. Otto, who writes in the beginning of *The Idea of the Holy*: “The reader is invited to direct his mind to a moment of deeply-felt religious experience, as little as possible qualified by other forms of consciousness. Whoever cannot do this, whoever knows no such moments in his experience, is requested to read no further; for it is not easy to discuss questions of religious psychology with one who can recollect the emotions of his adolescence, the discomforts of indigestion, or, say, social feelings, but cannot recall any intrinsically religious feelings.” [Otto 1936: 8] Given the intensity of an ontological experience in all of its aspects, Otto is probably right with his precaution and I see no reason why it should not be valid for experiential ontologies in general. But who can really claim to have had such an experience, and how can one claim and justify this experience? The number of people who could confirm and evaluate the ontological claims of an experiential ontology is probably very restricted. For the justification of its claims, however, such a theory can only rely on this minority.

and the *inductive* but not the *intuitive* methods distinguished by Hessen are about and how they are able to deal with both the *quaestio facti* and the *quaestio iuris* of meta-ontology. My aim is to arrive at a clearer picture of the kinds of experience an ontological theory is able to draw on, including the challenges the different experience-based ontologies encounter thereby. To avoid the equivocality of the umbrella term ‘experience’ and given that the inductive method only deals with empirical perception, I will, from now on, use ‘experience’ and ‘perception’ as synonyms, whereby I will act – for the sake of terminological consistency and within the boundaries of this project’s sub-framework – *as if* experience only covered empirical perception. In other contexts beyond the present project, however, ‘experience’ and its objects are, of course, much more comprehensive than perception and what is perceptible, because experience comprises not only perception, but also, for example, real phenomenological experiences (eidetic reductions), aesthetic intuitions, intercultural encounters, memories, emotions, faith, etc. As is also shown by the intuitive method and the ontological experiences it involves outlined above, there are many types of experiences beyond what is cognizable with our sense organs. But, from now on, when I use the word ‘experience’, it is only to the latter that I refer, unless explicitly specified otherwise.

1.2 The Deductive Method of Conceptual Ontology

The *quaestio facti* of meta-ontology is interested in the act with which an ontologist derives ontological categories. From where are they derived? How are they derived? Which ones are derived and why? According to Hessen,¹⁵ it is one of the characteristics of the deductive method that it locates its initial position, i.e. the domain from which ontological categories are derived, in the conceptual and ideal framework of the thinking subject and not in the facts or impressions of reality itself. At this juncture, it is presupposed that the rationality of the conceptual and ideal framework is in concordance with the laws of the reality this framework is about. Reality has to be as logical as the way we can ideally think about it. In other words, there has to be at least the possibility of an *adaequatio rei et intellectus*. This means that it is sufficient to analyze and logically deduce conclusions from concepts and ideas in order to get insights into the nature of what is real and into the most general structures of being. Direct experience is not necessary for the thus determined *quaestio facti*. How exactly ontological categories are then deduced from the conceptual and ideal framework of the thinking subject may differ from philosopher to philosopher. Hessen points out that whereas Spinoza deduces his metaphysical system in a Euclidean fashion from a set of unchangeable definitions and axioms, the German idealists Fichte, Schelling and Hegel derive their ontological systems from the internal dynamics of highest principles such as the I (Fichte), the identity of I and non-I (Schelling), or the logical idea of being and nothingness (Hegel). Instead of Spinoza’s syllogistic method, they apply a dialectical method of deduction,¹⁶ which, of course, differs again from philosopher to philosopher. However, as Hessen explains, all of these deductive approaches share the presupposition that reality has to be as rational as our concepts and ideas of it can maximally be. Hence in all versions of this method, it is possible to identify the ‘top-down’

¹⁵Cf. Hessen [1955: 15].

¹⁶Cf. id. [15 f.].

approach of deductive reasoning in which every step towards a systematic theory comprising the nature of reality is documented in the respective ontological system itself.

A further version of the deductive method, which is not specified in Hessen, is the above-mentioned tendency of conceptual analysis that was so prominent in the 20th century, in particular when ontological categories were deduced from concepts via the logic of language (supposedly mirroring the logic of the world). A case in point for approaching ontology non-experientially in this way is the contemporary philosopher U. Meixner. I select Meixner as an example, because in his ontological writings, he often reflects on the nature of ontology itself, which is very helpful for getting a clearer picture of the deductive method in conceptual analysis. This also makes it fully sufficient for our delineation of the ways in which ontology can be conducted non-experientially to concentrate on Meixner's meta-ontological comments without risking misinterpreting his actual ontology. First of all, it is the case both for the deductive and the inductive method and their respective refinements that they are alternatives that do not have to exclude, but ideally always complement each other. The method of deduction, for instance, may refer to a kind of experience of reality as a foundation on which concepts came into existence in the first place. Despite his preference for the deductive method, Meixner grants experience exactly this function: In a certain sense, it is a source of ontological knowledge (*Erkenntnisquelle*). "Experiences are indeed relevant for ontological theories, but not experiences of this or that, and also not the experiences, observations, measurements, that are undertaken in the single sciences. Rather, they are experiences of a very general nature (derived both from social practice and from perception) that are quasi fossilized and preserved in linguistic phenomena. They create a secondary phenomenal basis – the *primary* for ontology –, whose interpretation and coherent systematization is all but clearly determined." [Meixner 1994: 376]¹⁷ Thus, although social and perceptual experiences have shaped the concepts with which we think (about) reality,¹⁸ we cannot draw directly on these experiences to form an ontological theory. According to Meixner, we have to tap into the second source of ontological knowledge: the comprehension of our concepts (*Begriffsverständnis*). If we comprehend our concepts in a logically consistent manner and theorize them accordingly, we are able to participate in, and therefore uncover, the ontological rationality of reality itself.

In Meixner's view, we can only comprehend our concepts if we comprehend the language with which we express these concepts. In the same manner in which reality has to conform to the way we think, the way we think has to conform to the language in which thoughts

¹⁷"Erfahrungen sind in der Tat für ontologische Theorien relevant, aber nicht die Erfahrungen von diesem oder jenem, auch nicht die Experimente, Beobachtungen, Messungen, die in den Einzelwissenschaften angestellt werden. Es sind vielmehr die Erfahrungen sehr allgemeiner Natur (die aus gesellschaftlicher Praxis nicht minder als aus der Wahrnehmung stammen), die quasi versteinert in den sprachlichen Phänomenen aufbewahrt sind. Sie bilden eine sekundäre Phänomenbasis - die *primäre* für die Ontologie -, deren Deutung und kohärente Systematisierung aber alles andere als eindeutig vorgezeichnet ist." - All translations from Meixner, except for [1997], are my own.

¹⁸This point I will elaborate in the fourth chapter's take on cognitive linguistics.

are expressed.¹⁹ Consequently, we can conclude that reality has to conform to language²⁰ and that ontology should look at language to arrive at ontological truths about reality. It is not a natural language like English or Chinese or Arabic, however, but the language of symbolic logic, in particular an extended predicate logic²¹ and free logic²², that Meixner prefers for conducting ontological research. Whereas natural language not only unveils, but also obscures the ontological structures expressed in it without providing any criteria for “the decision, when it obscures and when it unveils” [id.: 377], an ideal logical language is semantically unambiguous in being either true or false.²³ Also, every step of deductive reasoning within such a language can be justified and verified thanks to a predefined set of rules and axioms. For the “formally valid inferences” in question, the “correctness” of these predefined rules and axioms does not have to be justified, but depends implicitly on “some logical intuition” [Meixner 1997: 4] that is not further analyzable.

This may imply the minor role experience is allowed to play within this version of deductive reasoning. What is more important, however, is what can be deduced from such unprovable premises, i.e. the capacity of valid formal inferences to create complex formal systems or theories as internally consistent models of reality.²⁴ The formality of such theories is their condition for being ontological theories, as, for Meixner, ontology is synonymous with formal ontology for two reasons: Firstly, we think reality in language and language has to be freed from its ambiguous aspects to arrive at consistent ontological truths. Only a formal, technical language can fulfil this ideal; secondly, because ontological categories are universal to such an extent that they can only be expressed in a formal manner. “The formal in formal ontology is only a consequence of its generality. Formal ontology is as ontology formal.”²⁵ [Meixner 2011: 95] Direct perception of what is given immediately, on the other hand, can never be the starting point from which ontological categories are derived. At most, perception forms the passive background from

¹⁹“Thinking – the effort for conceptual knowledge – takes place linguistically or becomes linguistic at the latest if one intends to really grasp a thought clearly, clearly in such a way that the thought can be conveyed to others. Therefore it seems likely that the nature of language determines the nature of thinking.” [Meixner 1989: 78] - “Denken – das Bemühen um begriffliche Erkenntnis – vollzieht sich sprachlich oder wird spätestens dann sprachlich, wenn man einen Gedanken wirklich klar zu fassen bekommen möchte, so klar eben, daß man ihn auch anderen mitteilen kann. Daher liegt es nahe, daß die Beschaffenheit der Sprache die Beschaffenheit des Denkens bestimmt.”

²⁰“The fundamental facts with respect to the totality of being are those facts which concern the fundamental distinctions and relations in that totality. We may expect that these are mirrored in the core structures of (descriptive) language, the language we use to speak about everything there is. This follows from the following consideration: (1) language [*1] is the main tool of cognition, and (2) a tool, if it is to be useful, must fit what there is; but (3) language, in fact, is useful for the cognition of what there is. [*2] Hence, if we ask what it is in the totality of being that corresponds to this central linguistic distinction (for example, that between sentence and predicate), or to this central linguistic relation (for instance, predication), then we are led to the fundamental distinctions and relations in that totality.” [Meixner 1997: 1].

²¹Cf. Meixner [1994: 376].

²²Cf. id. [381].

²³Cf. Meixner [1989: 78].

²⁴“In formal logic no derivation of the correctness of the basic laws is sought. The correctness of such laws is simply declared, perhaps on the basis of some logical intuition (which is not an ability in any way mysterious, but simply a special case of the ability to understand linguistic utterances). Starting from the simple basic laws, other more complex ones, where logical intuition does not help, can be deductively established.” [Meixner 1997: 4]

²⁵“Das Formale an der Formalen Ontologie ist also einfach eine Folge ihrer Allgemeinheit. Formale Ontologie ist *qua* Ontologie formal.”

which “what is ontologically relevant – the most general determinations of itself and of its contents – have long ago – since time immemorial – become apparent in language.”²⁶ [Meixner 1994: 383]

The strength of this version of the deductive method certainly lies in the way it reacts to what I called the *quaestio facti* of meta-ontology. Where are ontological categories derived from? From our conceptual apparatus. How are they derived? Via the analysis of concept-mirroring language, the development of technical language, and valid inferences made within the axiomatic system of the latter. Which ones are derived and why? This depends on the single philosopher’s preference and forms the transition from his or her subjective meta-ontological convictions and axioms into a concrete ontological model with universal pretension. In Meixner’s 2010 book *Modelling Metaphysics: The Metaphysics of a Model*, for example, a simple description of a model called ‘T’ marks the start of a long series of logical deductions. This model “has two types of positions: *spatial positions* and *temporal positions*. Moreover, Model T is finite regarding positions: it has 100 spatial positions, and 100 temporal positions. Model T is also finite regarding fillings. In fact, with regard to *(possible) fillings of (individual) spatial positions*, it is utterly simple: Model T has just one such filling: Full (as we may simply call it).” [Meixner 2010: 9] Subsequently, from the basic structure of this model, i.e. the concepts of space and time as well as their conceptualization in a grid-pattern, ontological categories such as universals, individuals and states of affairs are deduced. Little by little and with the utmost diligence, a map with ontological (sub)categories and their special nature and relations is thus drawn and proven to be logically coherent, whereby all consequent steps rely on Meixner’s subjective preference for and conceptualization of time and space as premises.

The drawback of this model and of similar deductive models is that they seem to be more concerned with internal consistency than with the legitimization and explanation of how the respective ontological categories can relate to reality as we encounter it.²⁷ How can such models ever be confirmed by external measures? In his reflections on scientific model building, B. Mahr correctly states that the main quality of a model is its double identity of being a model *of* something and its being a model *for* something. Only modeling for the sake of modeling is insufficient for a model to be complete. Instead, a model always transports a “cargo” [2008: 32] from one object (*of* which it is) to another object (*for* which it is).²⁸ Why should it then be

²⁶“Das in der Wahrnehmung ontologisch Relevante - die allgemeinsten Bestimmungen ihrer selbst und ihrer Inhalte - haben sich längst - seit unvordenklichen Zeiten - in der Sprache herauskristallisiert.”

²⁷Cf. for a model with a similar motivation W. Sohst’s *Prozessontologie. Ein systematischer Entwurf der Entstehung von Existenz*. Although Sohst classifies his ontological model as “strukturell-synthetisch” [id.: 31] instead of deductive, he holds the view that an ontological model should be internally consistent and pre-empirical, while it is the task of the reader, not of the philosopher, to relate the model to reality and the experience of it. “Das Verhältnis des hier entwickelten Modells zur Wirklichkeit entsteht also erst in dem Moment, wo irgendein Leser es für wert erachtet, Teile davon tatsächlich auf die Wirklichkeit anzuwenden und Sätze zu formulieren, die auf diesem Modell basieren und Aussagen über die Wirklichkeit sind. In dem Umfange, wie sich hieraus prinzipielle Möglichkeiten einer Anwendung auf oder der Erzeugung von Wirklichkeit ergeben, kann das vorliegende Modell auch reale Geltung beanspruchen.” [Sohst 2009: 41]

²⁸Cf. also Mahr [2012: 287]: “In the model of model-being it is assumed that the identity of an object *as a model* depends on the two basic relationships, between A and M and M and B, which the model object enters into according to its conception as a model. Typical of model-being is that both relationships stem from an action, an action which is either thought of or has actually been performed. In the action leading to the relationship indicating that M is a *model of* A, the model object M is chosen or constructed with reference to A, and in the relationship indicating that M is a *model for* B, B is chosen or constructed with reference to M. Both relationships are therefore of the same kind. They are called *relationships of creation* and relate

sufficient for an ontological model to be a model *of* reality (*quaestio facti*) without justifying how it can be a model *for* reality (*quaestio iuris*)?²⁹ Meixner is well aware of this difficulty. He tells us that “T is very far from *Reality (as we know it)*.” [Meixner 2010: 11]. He even tells us that by “scaling down the extension and complexity of *being*, simulation-metaphysics automatically moves to the point where it adopts a God’s-eye view (no matter whether there is also a place in the simulation for God-in-simulation, or not); simulation-metaphysics looks from *the outside* at *the-totality-of-being-in-simulation* [...]” [id.: 7] Unfortunately, none of us will ever have the privilege of being able to join Meixner in this position that takes the ‘top-down’-approach of the deductive method literally to extremes.³⁰

Meixner, however, knows that the reason why a model like his should be adopted – despite its struggle to answer the *quaestio iuris* – mainly lies in the appeal of the model itself, i.e. in its “purely aesthetic criteria and criteria merely relating to the economy of cognition.” [Meixner 1997: 16] Whereas he claims that “only in linguistic phenomena, what is specifically ontological can be grasped in isolation clearly, distinctly and intersubjectively comprehensible” [Meixner 1994: 383], it being impossible to prefer ontological models to one another for “general-intersubjective, rationally binding reasons”³¹ [Meixner 2011: 101], I would like to object that although the fact that it justifies how it relates to the experienced world around us and the objects and subjects in it may not be a *rationally binding* reason to be convinced by an ontological model, it is certainly a *rationally comprehensible* reason that such a model cannot be preferred to other models merely due to its aesthetic and cognitive attractiveness. In the end, ontological models are not like well-constructed novels that may be about reality, be inspired by reality, and somehow draw on language to express some truths about reality, but that do not have to explain whether and how they can make serious claims about the non-fictional world. To put it simply, if it is only for aesthetic and cognitive reasons and the inner stability of the model, why should we choose complex ontological models at all and not favor a literary text instead? Why should we not, to anticipate a later section of this project for example,³² prefer S. Delany’s science fiction novel *Dhalgren*, which presents a multistable reality and the experiences that go along with it,³³ as a model over a ‘proper’ theory about multistability, e.g. A. Zimmer’s ‘interactive realism’³⁴? Moreover, why should we buy the presupposition of every deductive method in ontology that the way we think and (should) use language mirrors the way

what is called a *source object* with what is called a *target object*. Due to the two relationships of creation, according to the conception of the judging subject, the model has two roles which together determine its *identity as a model*, and which at the same time justify our viewing of the model object as a model.”

²⁹Cf. also B. Smith’s critical stance towards the construction of models in ‘internal metaphysics’: “Model-theoretic semantics, too, is often implicitly understood in internal-metaphysical terms – the idea being that we cannot understand what a given language or theory is really about, but we can build models with more or less nice properties. What we can never do is compare these models to some reality beyond.” [Smith 2004: 157]

³⁰Cf. Koenderink [2014] for a critical approach to the assumption of a God’s-eye view.

³¹The same issue is pointed out by B. Smith in his critique of conceptual analysis for ontological purposes: “One obvious problem with the concept-centered view of ontology is that it is difficult to understand how ontologies could be evaluated on its basis. Intuitively, a good ontology is one which corresponds to reality as it exists beyond our concepts. If, however, knowledge itself is identified with knowledge of our concepts, and if an ontology is a mere specification of a conceptualization, then the distinction between good and bad ontologies seems to lose its foothold.” [Smith 2004: 76]

³²Cf. section 7.4 below.

³³Cf. Delany [1974].

³⁴Cf. Zimmer [1995; 1997; 2011].

the world really is? What if the world is experienced differently than the conclusions logically arrived at in the model make us believe?³⁵ And finally, how could an ontological model that is distanced from reality to such an abstract and formalized extent possibly offer a framework of reality with an explanatory value and accessibility from which non-ontologists, or in this case non-modelers, also benefit?

1.3 The Inductive Method of Experimental Ontology

Keeping the open questions at the end of the preceding section in mind, we can now introduce the second method, which, unlike the deductive one, draws on experience as a constitutive factor for ontological theory building. In so doing, the inductive method stands in contrast to the deductive method by being ‘bottom-up’ rather than ‘top-down’. This means that instead of stipulating one or highest, often a priori principles (possibly, but not necessarily derived from our conceptual apparatus) and deducing a model of reality from these principles, the inductive method commences, or at least generally pretends to commence, with direct access to the subject matter. In so doing, it takes the evidence of what is immediately experienced to be a primary factor for the development of an ontological theory. Whereas the highest principles of the deductive method, however, are supposed to be universal in scope from the outset, any experiential method can only draw on individual instances of experience, which are then generalized. Therefore, a universal theory that is derived from the singularity of experience

³⁵There are also philosophers who suggest the usage of models and model-based reasoning, but who do not join the camp of conceptual analysis. For example, P. Godfrey-Smith in his article ‘Theories and Models in Metaphysics’ proposes a view of constructing models in ontology/metaphysics as is done in the natural sciences. Such models are supposed to ‘resemble’ reality (which he calls the ‘target system’) itself, not just our concepts about it. “We can look at a model and explicitly assert various hypotheses about which target systems it resembles and in which respects the resemblance holds. [...] These hypotheses can be true or false.” [Godfrey-Smith 2006: 10]. The problem is that in this scenario, like in that of Meixner, we would have to compare the model with reality in order to see to what extent the resemblance of the model holds true. For every comparison, however, a *tertium comparationis* is needed, something that both compared objects have in common and that functions as a measure, applicable to both objects. The ontologist has to know which ontological category both the model and reality have in common in order to compare them with respect to this category. This means that the ontologist has to have some ontological knowledge about reality in the first place or at least at a later stage. Why then, if ontology is about reality by definition, should they not continue to elaborate on this knowledge about the world instead of making hypotheses about a model whose claims may or may not be true? If we do not have any ontological knowledge about reality, on the other hand, then a model can never justify its truth, i.e. its exact resemblance to reality, because the *tertium comparationis* is missing. And how could such a model truly resemble reality, if it is defined as “an imagined or hypothetical structure that we describe and investigate in the hope of using it to understand some more complex, real-world ‘target’ system or domain.”? [id.: 7] Imagination and hypotheses may be sufficient for the *quaestio facti*, but – although it might sound polemical – mere hope is not enough for the *quaestio iuris*. Furthermore, as Chakrabarti et. al [2016: 6] underline, every comparison needs to be made from a position outside of the two things compared. This means that the ontologist in question can neither be in the model, nor in reality, but has to withdraw to a ‘view from nowhere’, to a Meixnerian ‘God’s-eye view’. However, are we really able to distance ourselves this far from reality? Granted that we could, would we not lose sight of the things that ‘really’, i.e. descriptive-ontologically, take place and matter? It is no surprise then that Godfrey-Smith, just like Meixner, suggests focusing more on the inner life of the model instead of on its relatability to the outer world: “Much of the time, we need not obsess about saying things that are literally true. We just work within the model, develop it, show its resources, and assail those who would use other models instead. This is how our general capacity for model-based understanding seems to operate.” [id.: 11]

can only probably or improbably be true, never a priori right or false. It is their plausibility and evidence rather than their logical inevitability that keeps them afloat. This means that any experiential ontology, i.e. any ontology developed solely on empirical grounds, struggles with the *quaestio facti* in that it cannot entirely account for the factual correctness of the ontological categories and statements on the nature of existence it postulates. On the other hand, the advantages of an ontological theory that is developed by means of direct experience are its ideally uncomplicated verifiability and, if necessary, revisability. As an experiential ontology is based on direct contact with its subject matter, the relatability of its theoretical statements with the concrete forms and contents of reality these statements are about can be confirmed, in principle, without artificial effort.

Hessen³⁶ characterizes the inductive method of ontology/metaphysics as being inspired by the positive sciences, both in applying the same methodology as the latter and in drawing on its research results. This implies that the inductive method takes a certain realist as well as an empiricist stance. It was established and enhanced for ontological or metaphysical purposes in the late 19th and early 20th centuries, subsequent to Kant's critique of a purely a priori ontology that was unable to answer the *quaestio iuris*.³⁷ In the course of the 20th century, however, the inductive method had to give way to notions of ontology as relying on either conceptual-linguistic or phenomenological and, in one way or another, intuitive methods. The conceptual-linguistic approaches in ontology became very influential for the analytic ontology of our time thanks to its positive reception in Neo-Kantianism and Logical Positivism. Recent developments in the field of ontology, however, have led to a renewed interest in the inductive method and its reliance on direct experience. One of the main proponents of this trend in modern ontology is L. Paul. Although, according to her, ontology has a different subject matter than the natural sciences, it should make use of the same methodology to arrive at its conclusions.³⁸

Furthermore, the scientific methodology that is appropriate for ontology can be subdivided, i.e. the inductive method of ontology consists of two closely related, but still distinguishable components. The first component draws on "quasi-perceptual judgments used in arguments from common sense and ordinary experience." [id.: 462] No laboratory settings, no empirical measurements, no statistical extrapolations are necessary to construct an ontological theory out of what are taken to be ordinary judgments about the world. The second component, by contrast, either uses such devices itself for ontological research or draws on the results of

³⁶Cf. Hessen [1955: 12–13].

³⁷According to Hessen, the philosophers and scientists G. Fechner, E. von Hartmann and W. Wundt established the inductive method for ontological research. The epistemological conditions for this method were then justified by O. Külpe, A. Messer and E. Becher. Finally, it was H. Driesch who integrated this method into his biological-teleological system. These philosophers and scientists saw their usage of the inductive method confirmed by the success of the empirical sciences and not in the least threatened by Kant's arguments against general metaphysics as being dependent on empirical experience. Rather, they thought that Kant simply did not recognize the possibility of the inductive method, because of "his rationalistic conception of knowledge [*Erkenntnis*] and science, which only held a priori knowledge, i.e. knowledge derived from pure reason, as scientifically valid." [Hessen 1955: 12]

³⁸"Those who argue that metaphysics uses a problematic methodology to make claims about subjects better covered by natural science get the situation exactly the wrong way around: metaphysics has a distinctive subject matter, not a distinctive methodology. The questions metaphysicians address are different from those of scientists, but the methods employed to develop and select theories are often relevantly similar." [Paul 2012b: 2–3]

scientific theories that made use of them, in order to ask questions that extend “past science to engage with the nature of parts of the world that science ignores or presupposes, because it involves speculative theses and assumptions that are either unnoticed, ignored or simply assumed as obviously true in scientific theorizing.” [Paul 2012a: 222] In subsections 1.3.1 and 1.3.2, I would like to adumbrate the characteristics and the applicability of these experiential (sub)methods for ontological theory building.

1.3.1 Ordinary Judgments and Natural Language

Ordinary judgments are made in natural language and usually refer to one particular region of reality: material, moderate-sized (‘mesocosmic’), familiar, both organic and inorganic entities that are perceivable without auxiliary equipment. This is one reason why natural language is ontologically relevant and why it is justified to elaborate on what Moltmann [2017] calls ‘Natural language ontology’, whose “aim is to uncover the ontological categories, notions, and structures that are implicit in the use of natural language, that is, the ontology that a speaker accepts when using a language. [...] Natural language ontology concerns itself with the ontological categories and structures implicit in ‘ordinary’ statements of a non-philosophical discourse, not those that form part of the content of philosophical or quasi-philosophical assertions. It concerns itself with the ontological categories and structures a speaker *accepts when using a language*, not those a speaker accepts when engaging in some form of philosophical reflection.” From judgments and linguistic expressions about, among other things, what appears in our direct empirical experience of entities and events, ontological claims with universal and usually realistic pretensions are derived. In their description of what is actually experienced instead of how reality should be according to logical or physical laws, such claims often go against the kind of rationality presupposed in conceptual analysis.

In his article ‘Against Revisionary Ontology’, Hirsch [2011a: 108] gives a good example of how an ordinary judgment can differ from a fundamental principle of conceptual ontology, namely “the principle that two things cannot wholly occupy the same place at the same time.” Hirsch presents a counter-example against this principle: “If a sculptor sculpts a statue out of a lump of clay, ordinary people say that the statue but not the lump of clay has just come into existence. It follows (by Leibniz’s Law) that the statue and the lump of clay are two things, and they wholly occupy the same place, contrary to the ‘no-two-things-in-the-same-place’ principle.” [id.] Thus, based on the empirical experience of a transition from clay to statue, the ordinary judgement ‘the statue has come into existence where the lump of clay was before’ can follow. From such a common-sense judgment, in particular if it is shared intersubjectively and if it is not (mis)interpreted as being an incorrect usage of the supposedly vague and ambiguous natural language in which the statement is uttered,³⁹ we are able to derive (parts of) an ontological theory with universal scope. In this theory, the principle ‘two

³⁹“I am claiming that the correct interpretation of the English language assigns truth conditions to sentences in a way that makes the ontological sentences typically asserted by ordinary people come out true. My assumption at present (subject, as I said, to further discussion) is that the revisionists will admit that they understand well enough the interpretation I have in mind, but they don’t think that is the correct interpretation.” [Hirsch 2011a: 110] “When we interpret a language we proceed on the presumption that ordinary speakers are making correct judgments about examples. That presumption is not defeated by the difficulty (or impossibility) of giving a clear analysis of how the language functions.” [id.: 119]

things *can* wholly occupy the same place at the same time’ is included and this theory can always refer to perceptual, common-sense experience for the justification of this principle.

For another example given by Hirsch, the same act of derivation from perception via ordinary judgment to theory-forming holds true. In this example, Hirsch turns against D. Lewis’ thesis “that the ontological assertions of common sense are correct if the quantifiers – such words as ‘something’ and ‘anything’ – are restricted roughly to ordinary or familiar things, but the assertions are false when the quantifiers are interpreted as unrestricted.” [id.: 106] If a person holds up a brown and a white wooden stick and asks other persons “whether they can see any wooden thing that is first white and then brown”, these persons would probably answer in the negative. Lewis can accept this answer, because he assumes that in a common-sense answer, the quantifier \exists only refers to the domain of ordinary things as which the wooden sticks are identifiable. Lewis, however, is a so-called ‘four-dimensionalist’ universalist, believing in the (rather counter-intuitive) existence of temporal parts. In the concrete example, he believes “that any early part of the white piece together with a later part of the brown piece add up to a wooden thing that is first white and then brown.” [id.] If the person holding the sticks now encourages their respondents by telling them that they should not only think about familiar objects in their answer, but about anything whatsoever (thereby unrestricted the domain of the quantifier), would they now see a color-changing stick? Probably they still would not. Lewis continues the example as follows: “But let’s take it one step further, with a final attempt at reconciliation: ‘Ah, you didn’t get the riddle. You see, you kept restricting your attention to just one sort of thing even though you were told not to. The correct answer is that any early part of this one together with any later part of the other one make up a wooden thing that is first white and then brown.’ Do they say, ‘Oh yes, how stupid of us! Give us another riddle.’? No, they throw you out the window. That there is a stark conflict between common sense beliefs and the universalist’s position seems to me undeniable.” [id.: 107] Consequently, an ontological theory that is derived from such an exemplary situation would not include the notion of temporal parts defended by Lewis.

There is no doubt that ordinary judgments can be contradictory in that they basically rely on single, contingent experiences. Whereas one person sees a statue, another person only sees a lump of clay; or whereas one person may see two sticks, another person may think that both originally belonged to a longer stick that was only broken in half, but still exists as one (broken) stick. Therefore, Hirsch [id.: 112–3] gives us some criteria according to which we can assign correctness to ordinary judgments. Such a judgment should be, among others, backed up with good reasons, strongly and widely held, hard to explain away by a theory of human error, and perceptually verifiable. The importance of the latter criterion, which will lead us to the next section about empirical experiments in a minute, is also stressed by other philosophers arguing in favor of a common-sense ontology, for example L. Baker and B. Smith. Baker holds the view that the objects addressed in ordinary judgments, such as statues and sticks, are neither reducible to their physical particles, nor should the judgments themselves be reformulated “in unfamiliar terms” [Baker 2007: 4]. Instead, ordinary objects are “irreducibly real” [id.] and sentences “about ordinary things mean what ordinary speakers think they mean, and such sentences are often true.” [id.] It is only if we take ordinary objects to be real and statements about these objects to be based on good reasons that we can “straightforwardly explain the reliability of our sensory evidence; descriptions directly based on experience may be

metaphysically (maximally) accurate.” [id.: 7.]⁴⁰ Smith holds a similar view. According to him, an ontology of common sense should result “from the conception of the common-sense world as the objectual correlate of everyday perception and from a conception of perception itself as ‘direct’ in the sense of involving no conceptual or theoretical intermediaries.” [Smith 1995: 301] Smith justifies the universal scope of claims derived from direct perception by arguing that only the ‘conceptual or theoretical intermediaries’ are culturally and linguistically different, whereas the manner in which we directly perceive the everyday world would be “inborn in any organism capable of learning.” [id.: 305] Such universal perceptions consist in the mereological and topological recognition of salient “*boundaries* or *qualitative gradients*” [id.: 301] that can be seen as ‘delineated’ into reality.⁴¹ It is the task of an ontologist who constructs a theory based on common-sense experience to take into account and describe these perceptible delineations such as substances, events, parts and wholes, or identities, differences and similarities between objects and to inductively derive a universally valid theory from them.

Above, I accentuated the task of justification as the main motivation for answering the meta-ontological *quaestio iuris*. We can conclude that a natural language and/or common-sense ontology such as proposed by Moltmann, Paul, Hirsch, Baker and Smith facilitates the justification of its theoretical results as it takes seriously and attempts to ontologically explain sensuous experience from the outset. However, I do not think that a common-sense ontology can accomplish the critical derivation of fundamental categories an ontological theory should ensure for a better understanding of reality, as it can only offer what we and others already implicitly or explicitly know and take to be true. It also cannot confront us with surprising insights that describe reality in a way we have not seen it or we could not have guessed at before. Common-sense ontologies are no eye-openers. Instead of providing unexpected and profound points of view and thereby risking unprovable speculations, their level of innovation is limited to comparisons between differing ordinary judgments about familiar, perceptible objects and persons. This does not mean that such an ontology should better adhere to the often counter-intuitive claims of the positive sciences, above all physics. Instead, an ontology that is based on ordinary judgments truly operates on a different level of reality.⁴² This level could also be called the ‘lifeworld’ or ‘*Lebenswelt*’ (E. Husserl). Although, due to the inductive reasoning involved, ontological theories derived from these judgments can never be absolutely and a priori true, they can count on the empirical perceptibility and evidence of the objects the ordinary judgments are about. They just cannot go any deeper than that and have to remain on the limited and ‘shallow’ level of common sense, and one could even argue that such theories

⁴⁰Elder [2004: ix] takes the same meta-ontological line: “Familiar medium-sized objects not only exist, then, but have essential properties, in the traditional sense, and we often are able to determine which properties are essential to one or another of nature’s kinds.”

⁴¹“A certain capacity to apprehend those basic delineational structures of reality which are relevant to its survival must indeed be inborn in any organism capable of learning. The human capacity to distinguish colors or shapes, for example, or to recognize similarities in the phenomena perceptually experienced, or to find some experiences more rewarding than others, *could not have been learned*, for such capacities are presupposed by any process of learning which would be conceivable for human beings.” [Smith 1995: 305]

⁴²Cf. for example Smith [1995: 302]: “Thus while the common-sense world must be *compatible* with standard physics, it may go *beyond* physics in certain harmless but important ways. Examples of the sorts of features which may be peculiar to common-sense external reality might include: formal-ontological structures and relations of certain sorts, shapes, holes, patterns and other similar structures, as well as colors, tones, etc., conceived as qualities of external things.” Cf. also Paul [2010: 466] and Baker [2007: 9].

are right in doing so.⁴³ Be that as it may, because the everyday world is often confusing and involves many disruptive factors preventing it being possible for ordinary judgments to be given with good reasons, it is important to carry out controlled empirical experiments for the sake of ontological theory-building. This is where the inductive method of ontology draws nearest to natural science, in particular to cognitive science and the psychology of perception.

1.3.2 Empirical Experiments

Ordinary judgments about the nature of reality and everyday perception alone are often insufficient for the construction of an ontological theory. Such judgments and perceptions may serve as hints and guidelines or as arguments and (counter-)examples in the context of an informal discussion, but an ontological theory drawing on empirical experience should depend as little as possible on the contingency and arbitrariness that comes along with direct experience. This is where the significance of controlled empirical experiments emerges. In general, there has been a tendency in contemporary philosophy to make use of empirical experiments in order to disentrall philosophical claims from the ostensibly problematic a priori method of conceptual analysis. The representatives of conceptual analysis are often deprecated as so-called ‘arm-chair’ philosophers who rely on discretionary and highly debatable intuitions instead of provable data. The subjectivity and arbitrariness of these intuitions is often disguised by calling them ‘axioms’ or innate and universal, i.e. a priori ideas, whereby it is sensuous experience that is often classified as subjective and arbitrary. In contrast and in order to account for the implication of sensuous experience, experimental philosophers turn to empirical disciplines, including the cognitive sciences and psychological studies of perception, either to refer to research results or to conduct proper experiments according to the methodological standards of these disciplines.⁴⁴ Empirical experiments in ontology, of which there are only a few to date despite the broader trend in other philosophical areas,⁴⁵ not only allow for a better documented and more credible inference on the probability of ontological claims in looking at reality without conceptual mediation, i.e. in a ‘first-order’ fashion.⁴⁶ They also avoid cultural inconstancies as well as deceptions by illusions everyday perception can fall prey to.⁴⁷ In so doing, empirical experiments in ontology function not only as a refinement, but also as a corrective for conclusions made from ordinary judgments.

⁴³Cf. the discussion of counter-intuitive ‘deep’ and commonsensical ‘shallow’ ontology in Hirsch [2011b].

⁴⁴Cf. Fischer et al. [2015] for an up-to-date overview and Kauppinen [2007] for a compact characterization and criticism of experimental philosophy.

⁴⁵This unfortunately correct observation is made by Thomasson [2012: 185, 190].

⁴⁶Cf. Prinz [2008: 199]: “When experimental philosophy is used to criticize traditional philosophy, it potentially severs the link between conceptual claims and ontological claims. Since Plato, traditional philosophers have often assumed that we can figure out the nature of some first-order thing (love, truth, the good, etc.) by figuring out how people understand the concepts. Concepts are presumed to be a window onto ontology. As remarked already, experimental philosophers do not typically assume that our concepts are accurate. When they show variation in subjects’ conceptual intuitions, they raise questions about whose concepts, if any, are correct. If conceptual intuitions are highly variable, then building a first-order theory of the basis of intuitions may be a mistake. In this way, experimental philosophy can be seen as justifying empirical philosophy. If intuitions are unreliable, then perhaps other methods should be used in developing first-order theories. Experiments that directly measure mental processes, for example, can be used to determine whether our intuitions about those processes are correct.”

⁴⁷Cf. Paul [2010: 469]: “The claim is not that philosophers cannot draw on ordinary judgments when constructing their ontological models; the claim is that we must not do so in a naïve way.”

Paul demonstrates this by showing how the perception of a simple visual model and the usual judgments about this perception can correct ontological views on causality a philosopher may hold to be true. The model used by Paul stems from A. Michotte's experiments on the perception of causality⁴⁸ and displays on a computer screen a motionless green object towards which a red object is moving. When the red object is adjacent to the green object (without overlapping it), the red one stops its movement, while the green object begins to move.⁴⁹ Ordinary perception interprets this sequence of movements as a causation of the green object's movement by the red object's arrival, as if the latter pushed the former. The judgment 'the red object caused the green object to move', however, is unfounded, because the sequence of movements is just a sequence of spatial changes the objects traverse independently of each other. Paul concludes from this that an ontologist cannot uncritically rely on judgments about causality made in common-sense perception, because "we can have the visual impression of causation even when there is no causation involved, and even when we know there is no causation involved." [Paul 2010: 471–2] Therefore, "we need to be clear on different cues and camouflages that might affect our causal judgments." [id.: 474] It is only by taking into consideration empirical experiments such as the one by Michotte⁵⁰ and by observing, collecting, evaluating and, if necessary, correcting ordinary perceptions and judgments that we can inductively generalize experimental findings for the sake of an ontological theory.⁵¹

Other interdisciplinary research between ontology and cognitive studies concentrates on, for example, the experience of object properties such as colors,⁵² the visual presentation of reality,⁵³ and propositional attitudes⁵⁴ in the context of an ontology of the mind, as well as insight into universals and particulars.⁵⁵ In my discussion of the ontological interpretability of Gestalt-thinking in chapters 6 and 7 below, I will connect psychological and cognitive research in this regard with the question of parts, wholes and their oscillations in formal ontology. This is the reason why I am outlining the current tendency of experimental philosophy/ontology right now. I provide an interpretation of Gestaltist research on the empirical experienceability of parts and wholes in order to interpret Gestalt theory as a source for experimental ontology. Furthermore, this subsection serves the purpose of a precaution of which not only my intended interpretation but every inductive-empirical method in ontology must be aware. The precaution is the following: Empirical perception and experiments may be necessary constituents of an ontological theory that aims to respond positively to the meta-ontological *quaestio facti* and the *quaestio iuris*, but they can never be sufficient constituents in this matter. Not only philosophers

⁴⁸Cf. Michotte [1946].

⁴⁹A simple demonstration of the object's movements can be found on the website <http://cogweb.ucla.edu/Discourse/Narrative/michotte-demo.swf> (last visited on 7 December 2019).

⁵⁰Cf. on Michotte's just sketched experiment also Smith [1988a: 32].

⁵¹Cf. on this topic also S. Siegel's [2009] article 'The Visual Experience of Causation'. In a similar vein, Casati [2003] shows that common-sense statements about 'representational advantages' of certain types of objects (complete material objects) over other types of objects (scattered material objects) are not affirmed by experiments in cognitive science. Therefore, any descriptive approach in metaphysics/ontology should be cautious in accepting such representational advantages that would make one type of object ontologically privileged compared to other types of objects only due to our pre-reflective, perceptual preference of complete material objects.

⁵²Cf. Kennedy [2007].

⁵³Cf. Albertazzi [2010].

⁵⁴Cf. Garfield [1988].

⁵⁵Cf. Smith [2004]

who take a critical stance towards experimental ontology, as A. Thomasson does in her article ‘Experimental Philosophy and the Methods of Ontology’,⁵⁶ but also adherents of this method such as Paul make it clear that direct experience and empirical measurements alone are never sufficient for ontological theory forming. While the starting point of inductive reasoning can be located in experience, the resulting claims that are induced from experience always require at least a minimal amount of a priori reasoning in addition. A theory does not just consist of a listing of single experiences that have been had, but it also necessitates what Paul calls “theoretical desiderata such as simplicity, elegance, parsimony and overall theoretical fit.” [Paul 2010: 465] Moreover, the empirical data have to be ordered, evaluated, generalized, interpreted, compared and perhaps statistically extrapolated. This would be impossible without a certain conceptual input from the ontologist developing the theory. Furthermore, a priori reasoning is needed to compare and analyze competing theories⁵⁷ and to make sure that empirical experience can be distinguished from imagination, dreams, memories or other non-empirical acts and contents of the mind.⁵⁸ Apart from this, any experimental ontologist needs to have at least a vague, a priori idea or ‘intuition’ of the empirical data that it is worth researching in the first place. Without an intuitive hypothesis, without an idea about what ontology is and requires, and without the a priori decision about the region of reality (material objects? fictional objects? social structures? art?) and the categories towards which the experiment is directed (time? causality? existence? holes? part-whole relations?), it would be a hopeless effort to collect empirical data or make notes of people’s ordinary judgments at random. As long ago as 1955, similar concerns about the exclusivity of the inductive method led Hessen to the rather radical conclusion that “the demand of inductive metaphysics is either not realized at all, or it is realized in such a way that de facto there is no inductive metaphysics, or an inductive metaphysics (in the actual sense) is neither demanded nor offered.” [Hessen 1955: 27].⁵⁹

What this criticism of the inductive method boils down to is that without deductive reasoning and the application of concepts, the *quaestio facti* of meta-ontology has to remain unaccounted for. Indeed, we have to decide a priori where the ontological categories of our theory should be derived from (the ontological region ordinary statements and experiments are about), how they should be generalized and which categories are of importance and, indeed, are about the world itself. We can learn from this that in the same way that the deductive method

⁵⁶Cf. Thomasson [2012].

⁵⁷“Assuming that the competing scientific theories are approximately empirically equivalent, or at least empirically acceptable, selection of a theory over its competitors is determined by a mix of desiderata, including its overall explanatory value, which is evaluated in part by its simplicity, elegance, and fit with already accepted theories, intuitions and assumptions. This is one place where a priori reasoning and inference to the best explanation play an important role. After a theory is selected from the mix as providing the best explanation, if one is a scientific realist, its class of models is supposed to give us the truth about the nature and structure of certain features of the world: i.e., we accept the theory as a representation of these features of the world.” [Paul 2012b: 11-12]

⁵⁸J. Nagel makes us aware of the latter point in her discussion of the empiricist positions of J. Locke and B. van Fraassen: “To make the kind of epistemic use of experience that empiricism demands, we need at least the capacity to sort out its deliverances from other products of the mind – imagination, dreaming, and so forth – and this sorting task is, I will argue, both a rational enterprise and one that demands substantive a priori knowledge for its execution.” [Nagel 2000: 346]

⁵⁹“Die Forderung einer induktiven Metaphysik wird entweder überhaupt nicht realisiert, oder sie wird so realisiert, dass de facto keine induktive Metaphysik vorliegt, oder aber es wird eine induktive Metaphysik (im eigentlichen Sinne) weder gefordert noch geboten.”

of conceptual ontology alone cannot justify how its claims can be related to reality (*quaestio iuris*), the inductive method of ordinary judgments and experimental ontology alone cannot account for the factual and universal appropriation of an ontological theory's claims (*quaestio facti*). Therefore, a complete ontological theory should respect both kinds of methods. We will have to keep this conclusion in mind if we want to arrive at an ontology of PWO in which both a posteriori experience and a priori concepts are embedded.

1.4 Recapitulation of the Methodology

The task of chapter 1 was to locate and describe methodological approaches according to which reality and experience are combinable in order to begin the determination of the ontological nature of PWO. For the most part, this question is not an ontological one, but rather a meta-ontological question *about* ontology, more precisely about the methods with which ontology can be carried out. I argued in section 1.1 that if meta-ontology methodologically reflects on the methods that are useful to construct an ontological model, then it should fulfill two simple criteria. The first criterion consists in demonstrating where the method takes the ontological categories of the theory from, how precisely it attains them, and why it derives these and not others. We could imagine this criterion as an arrow pointing from the data to be investigated (reality or our most general concepts about reality) to an ontological model of this data. The second demand concerns the justification of the ontological claims made in the theory. Here, the arrow points from the theory back to reality, as it were. Is the theory able to justify how its claims can relate to reality? Is it not only a hypothesized model *of* reality, but also a justified model *for* reality, or whatever the model claims to be about (Being, causality, time, etc.)? My suggestion was that in order to refer back to reality, a theory's method should seek empirical confirmation. Without confirmation, it is impossible to verify or falsify the claims made in an ontological model. By drawing on Kant and his reflections on ontological cognition (*Erkenntnis*), I labeled the first criterion the meta-ontological *quaestio facti* and the second criterion the meta-ontological *quaestio iuris*. The next step was to identify different ontological methods and to see how these methods can fulfil the two criteria. With the help of Hessen's book *Die Methode der Metaphysik*, I introduced three ontological methods and delineated examples from 20th century ontology for each of them. Furthermore, I pointed out which kind of experience, if any, is constitutive for the respective method and I showed why the third method, i.e. the 'intuitive' one that draws on ontological experiences, is not suitable for the further determination of PWO's ontological nature.

For the deductive method (1.2), any kind of perception or experience is, in principle, dispensable, because it gets all the information it needs to respond to the *quaestio facti* from the a priori conceptual apparatus and/or from one or more absolute principles. The former case was more prominent in recent years. Via the postulation of some of the most general concepts as axioms, the ontological nature of these concepts is deduced in a 'top-down' fashion and clarified by the analysis of natural languages and the construction of technical languages. This results in models that are intended to resemble reality, because reality is supposed to be as rational as we can logically think of and express it. However, it seems to me that such models struggle to justify their relation to reality due to their inability or lack of interest in being confirmed by

experience. In many cases, ontological models are more concerned with their internal consistency than with their external verifiability. This, together with their usually formalistic nature, makes them weak candidates for the self-legitimization we may expect from a theory that either pretends to explain reality as it is supposed to be or that pretends to revise the manners in which we usually see it.

Unlike the deductive method, the inductive method (1.3) takes its data for the *quaestio facti* from experience. The kind of experience it takes it from is empirical in nature and expressible or retrievable in ordinary language. For the most part, this method concentrates on familiar, material, mid-sized, organic and inorganic entities and how they are perceptible. Either via the consideration of ordinary judgments (1.3.1) or via empirical experiments (1.3.2), an ontological model is thus derived in a ‘bottom-up’ direction. On the one hand, the inductive method is very strong in the confirmative aspect of the *quaestio iuris*, because the claims of its models can be easily verified and falsified in the everyday world and by direct perception. On the other hand, it relies on a priori reasoning of a deductive kind for the construction of an ontological theory, which is why it cannot fully satisfy the criterion of the *quaestio facti* alone. Also, ontological theories drawing on perception and ordinary judgments are rarely original or even controversial, because in not being counter-intuitive, they either confirm what we already know from the everyday world, or they just statistically extrapolate which ontological truth claims the average subject (with a certain language, culture, age, etc.) makes with regard to perceptible entities. The ontological regionalization, i.e. the restriction to perceptible and material entities, is a further reason why the inductive method alone cannot provide general propositions about reality as a whole or fundamental categories of it (unless, of course, it explicitly reduces the inventory of reality to such entities).

To conclude, there are indeed methodical approaches in ontology according to which reality and experience are combinable, both in an empirical-perceptual and what I defined as an experiential sense. These methods are no more perfect, however, than the deductive method, for which perception and experience are not constitutive. Therefore, and with regard to my aspiration of looking for an ontological theory in which the ontological nature and status of PWO can be thoroughly determined, it would be unreasonable to side with just one of the two methods alone. Although it seems unusual and because it is undogmatic, I prefer to take and apply them instead as a pair, in a flexible way in which the disadvantages of one method are counterbalanced by the advantages of the other. It is due to their mutual dependence in accounting for the two *quaestiones* of meta-ontology that the discrepancies of these methods appear as constructive complements rather than constrictive contradictions. From now on, this pair of ontological methods shall guide us further through the process of interrelating the four parameters *reality*, *experience*, *part-whole* and *meaning* in order to determine the ontological nature of PWO. As a first step towards this aim, we have to answer to the meta-ontological *quaestio facti*.

2 A Formal Ontology for PWO? Husserl's 3rd Logical Investigation

2.1 Preliminary Remarks on Formal Ontology

Section 1.2 portrayed conceptual analysis as a method consisting of a priori reasoning. The problem with a priori reasoning is not that its concepts and 'top-down' conclusions would be arbitrary by themselves. At least they are no more arbitrary than the conclusions of a 'bottom-up' method that simply starts its investigation by collecting empirical data at random, without a predefined hypothesis and research focus, without guiding concepts, just by recording unfiltered perceptions on a 'white sheet of paper'. To put it simply, we can never find something in the world without knowing beforehand what we are looking for. Conceptual analysis in ontology faces a problem when it often painstakingly determines what it is looking for, but does not try to find it in the end, because this would necessitate the transcendence of the model and challenge its external consistency. It would shift the measure from the internal coherence of the model to its relatability to something outside of it: reality, or any other ontological subject matter. This, and not the analysis of concepts and a priori reasoning as such, makes conceptual analysis often appear as arbitrary and as an end in itself.

Therefore, in order to find an ontological theory that is able to determine the ontological status and nature of PWO, we should not stop halfway with either method, but arrive at the contact point of 'top-down' and 'bottom-up' by following both directions alike. In this regard, I agree with J. Lowe who claims that the method of ontology/metaphysics "is first to argue, in a relatively *a priori* fashion, for the possibility – and compossibility – of certain sorts of things and then to argue, on partly empirical grounds, for the actuality of some of those things that are compossible." [Lowe 2011: 81] In this section, we start at the 'top', by a priorily outlining the possibility and compossibility of 'certain sorts of things', namely parts, wholes and, in particular, their mutual interplay as a dynamic entity. Later chapters will then be concerned with the actuality of PWO by arguing on empirical grounds, i.e. from the 'bottom' towards what will have been determined in the present chapter as the conceptual possibility of PWO.

As the aim of this project is the outline of an ontological theory whose scope is universal and whose conclusions are valid for every conceivable domain of reality in which part-whole structures appear, this first step should lead us to a formal ontology. According to Guarino [1995: 5], "what formal ontology is concerned in is not so much the bare existency of certain individuals, but rather the rigorous description of their *forms*." Thus, with a formal ontology we cannot determine the ontological status, i.e. the actual existence, of PWO. Yet we may arrive at a better understanding of its possible formal nature, even if we postpone the confirmation or negation of its existence until we commence the bottom-up approach. What I would like to discover in this section is merely its formal possibility, i.e. the condition for its actual

existence. For the moment, we have to classify PWO as an abstract and hypothesized concept, as an as-if-entity, the proper nature and existence of which is still under-determined.

What is more, even the mere possibility of PWO cannot be concluded in an a priori fashion if the latter is understood as strict deductive reasoning. When N. Cocchiarella [2007: 4] defines formal ontology as “a comprehensive deductive science that is prior to all others in both logical and ontological structure”, I only agree with the priority of formal ontology (for reasons of the meta-ontological *quaestio facti* pointed out in the previous chapter). However, I doubt that even a formal ontology can be and should be deductive in a strict sense, because this would make its conclusions simply tautological and therefore uninformative.¹ We will see in subsection 2.2.7 that even the actual possibility of PWO does not deductively follow from the formal possibility of parts and wholes. Yet, it seems plausible to me that the former can be included as a certain type of category in a formal ontology that has to start with parts and wholes as premises. For this reason, I strongly sympathize with Lowe again, who holds the view that formal ontology “is not – or certainly not merely – the application of formal systems to questions of ontology. By ‘formal systems’ here I mean logistical systems, broadly conceived – thus, formal logic in its various guises, set theory, and mereology (the formal study of part-whole relations).” [Lowe 2011: 82] Lowe thus even excludes mereology from formal ontology, although mereology, i.e. the formal “theory of parthood relations: of the relations of part to whole and the relations of part to part within a whole” [Varzi 2016], would have certainly been a putative candidate for a conceptual approach towards the ontological theory whose development I have in mind.²

What then, according to Lowe, should formal ontology comprise if it is not logical forms that are stipulated and derived with strictly deductive methods? Lowe claims that formal ontology should rather be concerned with ‘ontological forms’, whereby the “notion of ontological form is indissolubly tied to that of ontological categories, for in effect to characterize an entity’s ontological form is to specify the ontological category to which it belongs. [...] So, to specify an entity’s ontological form is, centrally, to say what its existence and identity conditions are and thus to specify its general essence – that aspect of its essence that it shares with all other entities belonging to the same category. For, to know what an entity is, we need to know what it takes for an entity of that kind to exist and what it takes for an entity of that kind to be the same as or different from any other entity of that kind. Very often, this will involve how such an entity is essentially related to entities belonging to other ontological categories” [Lowe 2011: 83] Although I take this characterization of formal ontology very seriously, it is hard to understand, because it is dense and Lowe explains one technical term (ontological form) with other technical terms (ontological category, entity, existence and identity conditions) that are themselves in need of explanation.

Let me try to give a simple interpretative application of this passage by using the part-whole terminology that matters for this project. The ontological form we seek is part-whole oscillation. The ontological categories that are indissolubly tied to PWO are ‘part’, ‘whole’ and ‘relation’, and, in a wider sense, the other parameters ‘meaning’, ‘reality’ and ‘experience’.

¹D’Agostino et al. [2009: 352] call this the ‘scandal of deduction’: “[...] if the conclusion of a deductive argument is always ‘contained’ in the premises, why is deductive reasoning generally perceived as highly valuable epistemically? If all theorems are ‘contained’ in the axioms of a theory, how is mathematical discovery possible at all?”

²Cf. Smith et al. [1983: 73–4] for a similar distinction between formal logic and formal ontology. I will come back to the approach of mereology and Lowe’s reason for not classifying it as formal ontology in section 3.1.

At least one necessary condition for the existence of PWO would be that the parts and whole co-exist as different, distinguishable aspects of one entity. Such an entity we will later identify as a conceptual metonymy for the ontological region of embodied language,³ and as a Gestalt entity for the ontological region of empirical perception.⁴ Formal ontology is not restricted to any region of reality alone. This is what makes it formal, not only material, not only ideal, not only regionally applicable, for example to an abstract domain of logical laws. Admittedly, I do not yet know if there is any identity condition for PWO and to which other entities belonging to other ontological categories PWO can essentially be related. Investigating this would be futile without at least determining the possibility, if not even the actuality, of PWO beforehand.

Prior to the determination of PWO's ontological nature and – which will not be part of this project – of its actual ontological status, we have to disclose the conditions for its existence, starting with the concepts of part, whole and their relation as ontological categories. In so doing, we should not understand concepts as mental bubbles leaving, together with the model they result in, all external reality outside. A concept is rather (and once again in accordance with Lowe) “just a way of thinking about something – either a particular thing or a sort of things – and can be more or less adequate, to the extent that it more or less accurately represents the nature of the thing or things in question.” [id.: 81] Concepts are thus always in a relationship to what they are about, and consequently, conceptual analysis, especially with the pretension of counting as formal ontology, is not a top-*only* method, but a top-*down* method. This means that it is always directed towards and – just mediated by concepts – analyzing reality itself instead of orbiting around its starting point by being self-referential. As Asenjo [?: 363] writes, “formal ontology is definitely ontological, since its major major emphasis and final aim is the applicability of concepts and theory to reality.” Hence, also, the use of concrete examples is absolutely to the point and appropriate in order to illustrate what the concepts in question are about. Even an analysis of concepts would be empty and formalistic if it did not target the concrete entities that are supposed to correspond with the analyzed concepts. The early E. Husserl, to whose formal part-whole ontology we now turn, formulates this Kantian principle as follows: “No concept can be thought without foundation in a concrete intuition.” [Husserl 2003: 83].

2.2 Husserl's 3rd Logical Investigation

We start at the top, at the two highest conceptual peaks from which we can go downhill via a priori reasoning, as far as we want formal ontology to carry us. Obviously, the two highest conceptual peaks for any formal part-whole ontology are the correlative notions of ‘part’ and ‘whole’, which, due to being correlative, always stand in a certain ‘relation’. By stipulating only these formal categories in the beginning of the third of his *Logical Investigations* (henceforth abbreviated as ‘3rd LI’), Husserl inaugurates a 70-page long *tour de force* consisting of distinctions, definitions, applications, not always obvious examples, technical terms, and even more distinctions, all derived from the simple concepts of part and whole. Admittedly, it is laborious to fathom the 3rd LI, in particular considering the relatively low amount of secondary

³Cf. chapter 5.

⁴Cf. chapters 6 and 7.

literature on it compared to the vast scholarship on Husserl in general. Every attempt at understanding this investigation, which Smith et al. [1982: 37] declare to be “the single most important contribution to realist (Aristotelian) ontology in the modern period”, however, is rewarding in at least two respects.

It is rewarding, firstly, because “it provides a formal structure that reappears at many strategic places in the *Investigations* and in Husserl's later work. It serves as the skeleton for Husserl's more elaborate philosophical doctrines about subjectivity and its world.” [Sokolowski 1968: 537] As Sokolowski demonstrates, a good understanding of the 3rd LI can help in deciphering, among others, Husserl's later noematic analyses on how objects appear in consciousness, his conception of subjectivity and intentional acts, and the global manner in which he introduces phenomenological terminology.⁵ This aspect of understanding the key role of the 3rd LI can also be reflected on, as D. Willard⁶ does, by describing the transition from Husserl's 1890s writings, especially his *Philosophy of Arithmetic*⁷ and his paper ‘Psychological Studies in the Elements of Logic’,⁸ to the formal conception of parts and whole in the *Logical Investigations*. Also E. Ströker points out that the 3rd LI is crucial for comprehending the other LI as well as Husserl's complete phenomenology.⁹ R. Poli depicts the development of Husserl's formal ontology from the *Logical Investigations* to Husserl's later writings (*Ideas I, Experience and Judgement*) and compares it with Husserl's varying conceptions of formal logic.¹⁰ Furthermore, B. Smith interprets Husserl's theory of objectifying and nonobjectifying acts in terms of relations of foundations that are mainly developed in the 3rd LI.¹¹ Smith et al. [1982: 47] even hypothesize that “as a matter of fact and of principle, all propositions of phenomenology are expressions of what we shall call material *a priori* connections between moments, are capable of being perspicuously represented within the framework of the theory of part and whole.” All of this is significant indeed, but I prefer to refrain from working out the details of this aspect, because it requires an extensive excursion that would, however, only nebulize the aim, which is not Husserl exegesis, but – in this section – a formal ontology of parts, wholes and the possibility of their interplay in order to go beyond Husserl.

Secondly, a clear picture of Husserl's formal part-whole ontology functions as a prerequisite for entering into formalistic, perceptual and experiential discussions on part-whole relations. It provides us with propaedeutic, flexible terminology and definitions. In addition, it is – due to its ontological pretension – unrestricted to any domain of reality without excluding the role of perception from the outset. This is especially relevant for the present project, which takes both the deductive (*a priori* reasoning) *and* the inductive (perception) methods of ontology into account. Moreover, Husserl's formal ontology is what may be called in contemporary terms ‘open source’. This means that it does not cling to a closed philosophical system and receive its

⁵“Husserl's terms are introduced by making philosophical distinctions and, as we have already anticipated, the distinctions are made according to the pattern of part-whole structures. Thus the very meaningfulness of what he says depends on the legitimacy of part-whole logic.” [Sokolowski 1968: 538]

⁶Cf. Willard [1982].

⁷Cf. Husserl [2003].

⁸Cf. Husserl [1979].

⁹“Insofern liegt die Thematik der dritten Untersuchung nicht nur allen Erörterungen über gegenständliche Strukturen zugrunde. Vielmehr durchdringt sie, wenn auch in einer vorerst verborgenen Weise, alle anderen Logischen Untersuchungen Husserls und letztlich seine gesamte Phänomenologie.” [Ströker 2009: xlv]

¹⁰Cf. Poli [1993].

¹¹Cf. Smith [1986].

validity from additional premises, or that it merely lies hidden beneath Husserl's phenomenology and has to be extracted from there. Instead, it seems to me that by revealing the formal code with which he operates both in the *Logical Investigations* and, later on, and by presenting it in an ontologically unrestricted, i.e. neutral environment, Husserl offers us an accessible open source code that everybody can read, modify and adapt to questions different from the ones he raised himself in his own work. As P. Simons [1982: 113-4] puts it, “the ideas [of the 3rd LI, M.S.] could become indispensable weapons in the conceptual armoury of the philosopher interested in ontology. [...] But, for all its detail, the investigation remains only a sketch of what a fully developed formal theory would look like, and like all philosophical sketches, presents problems of interpretation, lacunae, and vagueness, as well as being highly suggestive of possible fruitful developments.” To substantiate this impression, Simons himself explores Husserl's part-whole ontology in terms of modal logic¹² and mereology.¹³ Compared to Simons, my own aim in section 2.2 is unassuming and, although it engages in formal ontology, does not strive for logical formalization.¹⁴ By outlining Husserl's formal ontology and by demarcating it with his material ontology, I merely demonstrate how the 3rd LI's capacity for development can lead us one step closer towards the determination of the ontological nature of PWO.

2.2.1 Formal and Material Ontology

To begin with, it is helpful to visualize the 3rd LI as a 2-dimensional table with three columns and an as yet undefined number of rows. The left column is reserved for the concepts ‘part’ and ‘whole’ as well as their attributes such as ‘dependent’ and ‘independent’. We will come to these concepts and attributes in a second. The right column depicts the role these concepts and attributes play in a material ontology that draws on empirical laws and particular percepts. The middle column, by contrast, depicts the nature of these concepts and attributes in the context of purely formal, analytic laws. “Analytic laws are unconditionally universal propositions, which are accordingly free from all explicit or implicit assertions of individual existence; they include none but formal concepts, and if we go back to such as are primitive, they contain only formal categories. Analytic laws stand opposed to their *specifications* [right column, M.S.], which arise when we introduce concepts *with content*, and thoughts perhaps positing individual existence, e.g. *this, the Kaiser*.” [Husserl 2001: 20–1].

Concept	Formal Ontology (FO)	Material Ontology (MO)
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Thus, the concepts ‘part’ and ‘whole’ can be taken both in a purely formal and in what Husserl calls a ‘material’ or ‘factual’ (*sachlich* or *inhaltlich*) sense.¹⁵ The formal sense is to be understood as universal, i.e. as valid for every domain of reality, and instead of being about a particular thing with particular attributes, it concerns only pure species and the necessary laws between them, it concerns “what all objects and object-regions have in common.” [Smith et

¹²Cf. Simons [1982].

¹³Cf. the third part of Simons [2000]. For similar attempts to formalize Husserl's part-whole theory cf. Blecksmith & Null [1991], Fine [1995] and Casari [2000, 2007].

¹⁴Cf. Poli [2002: 642] on the difference between formal and formalized ontology.

¹⁵Cf. Albertazzi [1996] for a very detailed discussion of Husserl's formal and material ontology.

al. 1995: 29].¹⁶ Therefore, although it is not reducible to it, the formal sense has to include the material sense, as the material sense presents particular instantiations of species, for example in the regions of psychology or language.¹⁷ In return, as Smith [2000: 296] explains, “we can move from this level of material concepts to the purely formal level of: *a something, this something, something in general* and so on, by allowing materially determinate concepts to become mere place-holders for any concepts whatsoever – a process of ‘formalization’.” Due to the contingency of empirical contents, however, the analytic laws of the formal sense are never instantiated in a pure and necessary manner when perception is involved. By inserting this ontological ‘middle column’ in the 3rd LI, Husserl moves away from his former stress on psychological acts as conditions for the apprehension of wholes, which he emphasized especially in the case of arithmetic totalities,¹⁸ but also for the apprehension of particulars and species in general.¹⁹ This tendency is in line with the whole project of the LI and their prolegomena, in which Husserl wants to account for the objectivity of logical truths. It surely reaches its climax in the formal ontology of the 3rd LI, after the ideal, psychologically independent status of universals has been proven in the 2nd LI in order to account for objective knowledge.²⁰ This does not mean, however, that the perceptual side of parts and wholes became unimportant for Husserl. Throughout the whole 3rd LI, he makes concerted efforts to distinguish and compare both ‘columns’ in their relation to the concepts he discusses. But as Simons correctly remarks, Husserl is not always clear in this separation of the formal and the material sense.²¹ This makes it even more urgent to fill in the ‘cells’ of the following table with critical caution and readiness for objections.

Concept	Formal Ontology (FO) → Species	Material Ontology (MO) → Particulars
...

¹⁶“Concepts like Something, One, Object, Quality, Relation, Association, Plurality, Number, Order, Ordinal Number, Whole, Part, Magnitude, etc., have a basically different character from concepts like House, Tree, Color, Tone, Space, Sensation, Feeling etc., which for their part express genuine content. Whereas the former group themselves round the empty notion of Something or Object as such, and are associated with this through formal ontological axioms, the latter are disposed about various highest material Genera or Categories, in which *material categories* have their root.” [Husserl 2001: 19]

¹⁷It is in this ontological universalization of part-whole structures that Smith et al. [1982: 53] recognize the true innovations of Husserl compared to his psychological forerunners or linguistic successors: “These innovations centre around the recognition on Husserl’s part of *ontological structure*; relations of foundation are seen not, as in Stumpf or Twardowski, as exclusively a matter of relations amongst mental contents, nor, as in Schlick and Wittgenstein, as a matter of grammar. They are, rather, necessarily all-pervasive, extending through *all* material ontological regions, including both the linguistic and the psychological.”

¹⁸In his *Philosophy of Arithmetic*, for example, Husserl stated that a “*totality originates in that a unitary interest – and, simultaneously with and in it, a unitary noticing – distinctly picks out and encompasses various contents*. Hence, the collective combination also can only be grasped by means of reflexion upon the psychical act through which the totality comes about.” [Husserl 2003: 77]

¹⁹Cf. Smith [1988a: 20].

²⁰Cf. on the role of the 2nd and 3rd LI in particular Ströker [2009] and Willard [2003].

²¹“One of the problems with the interpretation of the third investigation is that not all traces of Husserl’s earlier psychological approach and interests have been expunged. This affects both the language within which Husserl makes his points, and the range of examples to which he generally makes recourse. Thus the word ‘content’ is frequently used where the word ‘object’ is also appropriate, and where the latter ought to be used in preference. This is despite Husserl’s acceptance that his remarks hold for all objects generally, and not just psychological contents.” [Simons 1982: 116] Cf. for the same critique Fine [1995: 465].

In the short introduction to the 3rd LI, Husserl makes an important distinction between conscious *content* (**C**)²² and *object* as such (**O**). **C** belongs to the domain of perception and is studied in descriptive psychology. It thus belongs to Material Ontology (**MO**) and can be associated with the inductive method discussed in section 1.3 above. **O** is the equivalent of **C**, but counts for every domain of reality and is studied in Formal Ontology (**FO**).²³ Therefore, what can be said about **C** in **MO** is just a special case of **O** in **FO**, which is, unfortunately, why Husserl often uses **C** and **O** interchangeably. Let us call the general concept that refers to both **C** and **O** an entity (**E**).

Concept	Formal Ontology (FO) → Species	Material Ontology (MO) → Particulars
Entity (E)	Object (O)	Content (C)

2.2.2 Simple and Complex Wholes

In the first paragraph after the introduction, Husserl claims that while **O** “can be related to one another as Wholes to Parts, they can also be related to one another as coordinated parts of a whole. These sorts of relations have an *a priori* foundation in the Idea of an object.” [id.: 4] An **O** can thus be a part (**O-P**) or it can be a whole (**O-W**). If an **O** has at least two disjunctive parts, it is a *complex whole* (**O-W-c**). If this is not the case, it is a *simple whole* (**O-W-s**). As part and whole are correlative terms, however, I find it questionable to speak about ‘wholes’ in the latter case, where no parts are involved. It would be more fitting to call **O-W-s** ‘atoms’, because they are not further dividable. In any case, Husserl gives an example for **O-W-s** and **O-W-c**, thereby drawing on the perceptual domain (which implies that this distinction counts for **MO**, i.e. **C**, as well). “In the unity of a sensory phenomenon we can perhaps discover a wholly determinate ‘moment’ of redness as well as the generic ‘moment’ of color. Color and determinate redness are not, however, disjoint ‘moments’. Redness, on the other hand, and the extension that it covers, are such disjointed moments, since they have no community of content. They have, we may say, a mutual association in the widest sense of the word; we have here a general relation of parts which is that of disjointed parts in a whole, an association of such parts.” [id.]

To illustrate this point, let's take an empty cup. This cup is red. The concrete redness of the cup and the universal idea, i.e. the species of redness, are not two disjunctive parts of the cup itself. The former is just the material instantiation of the latter. If we were only to consider the particular color, then a red cup is a **C-W-s**, what I suggest calling a ‘perceptible atom’. If we were only to consider the species ‘color’, then a red cup is a **O-W-s**, what I suggest calling an ‘objective atom’. But a cup is also a cup because of its shape. The concrete shape is something different than the concrete color, because they belong to different species. Only by

²²Husserl does not use these abbreviations, but I would like to introduce them gradually for the sake of clarity and as auxiliary means. They should not be understood as syntactical elements of a logical language, but only as abbreviated technical terms. It does not make much sense to isolate any of these abbreviations from this chapter, as their meaning changes until their final transformation into plain words at the end of the conclusion in section 2.3.

²³Cf. Schubert Kalsi [1978: 141–3] on the difference between ‘content’ and ‘object’ in general.

analyzing the species on the formal ontological level, can we clearly distinguish concrete color and concrete shape and conclude that a ‘mutual association’ of both species is necessary to account for the cup in question. The cup could also be green and would still be a cup. Thus the instantiation of the species ‘color’ could change, but not the species itself, because there is no shape without color. Just as it lies a priori in the species ‘shape’ that it needs the species ‘color’ – and vice versa –, it is an a posteriori law that every particular shape needs a particular color – and vice versa. Therefore in the case of the red cup, there are two disjoined parts in the sense of two disjoined instantiations of species: (red) color and (cup) shape. This makes the particular red cup a **C-W-c** and red cups in general **O-W-c**.

Concept	Formal Ontology (FO) → Species	Material Ontology (MO) → Particulars
Entity (E)	Object (O)	Content (C)
-Part	O-P	C-P
-Whole	O-W	C-W
–simple	O-W-s (objective atom)	C-W-s (perceptible atom)
–complex	O-W-c	C-W-c

2.2.3 Dependent Moments and Independent Pieces

Moreover, as we just saw, the part ‘color’ and the part ‘shape’ rely on each other. A shape needs to have a color and a color needs to be shaped in order to exist as parts of the red cup. This makes these parts *dependent* on the cup as a whole, because in this whole, they find mutual completion. In addition, the particular red cup, as a **C**, could not exist without being red and without being shaped. Thus also the particular red cup, taken as a **C-W**, is dependent on its two dependent **C-Ps**. A cup in general, as **O-W**, is not dependent on particular instances of colors and shapes, but it is, nonetheless, dependent on the species ‘color’ and ‘shape’, because these two species are greater wholes than cups in general are (there can be no cups without a color/shape, but objects other than cups can have a color/shape). By definition, “contents presented together on any occasion can fall into two main classes: independent and non-independent contents. We have independent contents wherever the elements of a presentational complex (complex of contents) by their very nature *permit their separated presentation*; we have dependent contents wherever this is not the case.” [id.: 6] The distinction between dependent and independent parts and wholes, which actually dates back to a similar distinction made by C. Stumpf for the domain of **MO**,²⁴ is valid in **FO** as well.²⁵ Thus we now have in **FO** independent parts of objects (**O-P-i**), dependent parts of objects (**O-P-d**), independent wholes of objects (**O-W-i**), dependent wholes of objects (**O-W-d**), as well as their correspondent terms in **MO** (**C-P-i**, **C-P-d**, **C-W-i**, **C-W-d**) to operate with.

²⁴Here is an excerpt from the original passage in Stumpf [1873: 108–9]: “Wir scheiden die Inhalte bezüglich des Zusammenvorgestelltwerdens nach dem Gesichtspuncte ihrer Zusammengehörigkeit in zwei Hauptclassen: *selbständige Inhalte* und *Theilinhalte*, und bestimmen als Definition und Kriterium dieses Unterschiedes: *selbständige Inhalte sind da vorhanden, wo die Elemente eines Vorstellungscomplexes ihrer Natur nach auch getrennt vorgestellt werden können; Theilinhalte da wo dies nicht der Fall ist.*”

²⁵“Our discussions so far have shown that there is always an *a priori* law governing what is non-independent, having its conceptual roots in what is universal in the whole and part in question.” [id.: 17]

Whereas Husserl calls **O-P-d**, **O-W-d**, **C-P-d** and **C-W-d** (if wholes are regarded as parts of more inclusive wholes, which is possible) *moments*, he calls **O-P-i**, **O-W-i**, **C-P-i** and **C-W-i** *pieces*.²⁶ As an example of a piece as an independent part, Husserl takes the head of a horse. We can imagine or think of this head without the other parts of the horse. It would remain the same head, with or without being attached to the other parts, independent of the background in front of which the horse's head appears. It "is unaffected by the elimination of any given arrangement of compresent contents whatsoever. This self-evidently entails: that the existence of this content, to the extent that it depends on itself and its essence, is not at all conditioned by the existence of other contents, that it could exist as it is, through an *a priori* necessity of essence, even if nothing were there outside of it, even if all around were altered at will, i.e. without principle." [id.: 9] We could also think of, for example, a piece of cloth *p* that can make part of a person *w* or hang in the closet *w'*, but can also lie loosely on the ground. In the case of pieces, there are only possible (**FO**) and actual (**MO**), but always contingent associations between the parts. Independent parts can be associated or separated or enter into a whole arbitrarily, without changes of their essence, without existential gain or loss for themselves. This leaves the question open whether or not this kind of whole is itself an additional entity, whether it enriches what may be called our 'ontological inventory'. As far as I can tell, Husserl does not explicitly ask or answer this question in the 3rd LI. Let us call an association of pieces (**O-W-i** and **C-W-i**) an 'agglomeration'. The only *a priori* (**FO**) and empirical (**MO**) necessity for an agglomeration is the self-sufficiency of the pieces. This is why a piece can be characterized as *concrete* or as a *concretum*.²⁷ Furthermore, as Sokolowski [2000: 23] explains, when pieces are separated from a whole, they can "become wholes in themselves and are no longer parts. Pieces, then, are parts that can become wholes."

This is different in the case of moments, where there is no necessary existence of one single moment, but a necessary law (*Wesensgesetz*) that is "given in our consciousness with *apodictic self-evidence*" [Husserl 2001: 12]. This law holds moments together in order to constitute a whole from which they receive their complement. Detached from the whole, a moment could not exist. It would just vanish into nothingness. "Moments are the kind of part that cannot become a whole." [Sokolowski 2000: 23] We cannot think of one dependent moment without necessarily thinking of other moments or a whole going along with it.²⁸ Within a whole **W'**, a

²⁶In their article 'Truth-Makers', Mulligan et al. [1984] point out that dependent and independent objects in a formal-general as well as in a material-particular sense can be traced back to the Aristotelian categories of substantial-universal (here: **O** in **FO**), accidental-universal (**C** in **FO**), substantial-particular (**O** in **MO**), and accidental-particular (**C** in **MO**). They also show how from Aristotle on these distinctions played a role in the theories of Descartes, Locke, Hume, Brentano and Stumpf, whereas in "modern Anglo-Saxon philosophy commitment to entities of this kind is rarer" [Mulligan et al. 1984: 293]. I will come back to this latter point in my discussion of material composition and mereology in section 3.1. However, Winston et al. indicate that part-whole relations should not be confused with the attributions of accidents to substances. "While towers have height as one of their attributes, height is not part of a tower." [Winston et al. 1987: 429] On the influence of Brentano's part-whole psychology and metaphysics on Husserl, cf. Heinämaa [2009: 268–273].

²⁷Cf. Husserl [2001: 29].

²⁸"What we here express by the word 'present', could be better expressed by the word 'think'. An attribute, a form of association and the like, cannot be *thought of* as self-existent, as isolated from all else, as being all that exists: this only can happen with 'thinglike' contents. Wherever the word 'think' occurs in this peculiar sense, we detect one of those subjective slantings of an objective, nay of an *a priori* state of affairs, which we referred to above. Differences such as this, that one object – we again choose the wider term, which includes the contents of intuitive experience [in our terms: perception, M.S.] – can be 'in and for

moment **P** can indeed be a **W** for other parts. For example, the color p as a moment of the cup w' can be a whole w for the different shades p' as parts of the color p . But if we were to detach w/p from w' , then w/p would not continue to exist, it would not remain w for p' or p of w' without having another whole above it. Both as a species and as its instantiation, the color red could not exist in and for itself as a simple or complex whole. For this reason, Husserl also characterizes moments as being *abstract*: they are not concrete and self-sufficient, but point beyond themselves for completion to “some whole of which it is a non-independent part.” [Husserl 2001: 29] Or in the words of Casati et al. [1999: 107]: “Dependent parts are parasitic on the wholes to which they belong.”

This is the case in what Husserl calls ‘moments of unity’ (*Einheitsmomente*). A moment of unity is the whole **C-W-d** or **C-W-i** in which single moments find completion. Moments of unity, which Husserl up to his LI also calls ‘figural moments’,²⁹ “built on the elements that we primarily distinguish, by which such elements are similarly or dissimilarly *associated into sensuous intuitive wholes*.” [id.: 8] Here, Husserl refers to C. von Ehrenfels’ Gestalt-qualities that, as we will see in chapter 6, account for a perceptual whole such as a melody, which is constituted by distinguishable, but mutually dependent elements of tones. Husserl makes clear, however, that “one needs here a supplementary distinction between the *phenomenological* moments of unity, which give unity to the experiences or parts of experiences (the real phenomenological data), and the *objective* moments of unity, which belong to the *intentional objects and parts of objects, which in general* transcend the experiential sphere.” [id.: 8–9] In other words, Husserl again emphasizes the difference between **FO** and **MO**. Whereas descriptive psychology, represented by C. Stumpf and Ehrenfels, observed the role of **C-P-d** in contrast with **C-P-i** for the constitution of **C-W-d** and **C-W-i**, Husserl takes these empirical observations as a starting point and emphasizes from there the significance of **O-P-d** and **O-P-i** as well as **O-W-d** and **O-W-i**. This makes sense, because if we were to remain only on the level of **C**, we could never explain, for example, why a melody is independent of the concrete tones in which it is played (it can be played on this or that instrument, in this or that octave). If we take a perceived melody – not the one written on a manuscript paper – only as a particular content, it is always dependent on its necessarily particular parts, on the concrete tones in which it is played. In order to explain the independence of the melody, what Ehrenfels calls its ‘transposability’, we

itself’, while another can only have being in, or attached to some other object – are no mere contingencies of our subjective thinking. [...] What cannot be thought, cannot be, what cannot be, cannot be thought – this equivalence fixes the differences between the pregnant notion of thinking and the ordinary subjective sense of presentation and thought.” – This passage is crucial, because it underlines Hessen’s characterization of the deductive method of ontology that presupposes the *adaequatio* of a priori thinking and reality (cf. section 1.2).

²⁹In his *Philosophy of Arithmetic*, Husserl describes ‘figural moments’ as “units in which the peculiarities of the contents or of their primary relations fuse with one another. I say ‘fuse’ [*verschmelzen*], and wish thereby to stress that the unitary Moments are precisely something other than mere sums. We grasp the quasi-qualitative character of the whole intuition as something simple, and not as a *collectivum* of contents and relations. But what is simple to our first apprehension turns out upon subsequent analysis to be something complex. We discover the intrinsic and the relational peculiarities appertaining to the respective quasi-quality; we clearly see (at least in the cases easier to analyze) that those peculiarities form its *parts*.” [Husserl 2003: 216] This passage is not only important for its description of ‘figural moments’ as such, but also because it stresses the interplay of simple and complex wholes, thereby giving a first impression of what I will identify as PWO in section 2.2.7. Cf. Poggi [2016: 141] on how the usage of the word ‘fusion’ (*Verschmelzung*) dates back to the psychology of J. F. Herbart, in which “‘fusions’ are also composite presentations, where two or more elements come together simultaneously.”

have to understand the melody in question as *a kind of O* that is dependent on its **O-P**, its ideal parts (e.g. its having tones in general), but not on its **C-P**, its particular parts.³⁰ We approach the notion of a Gestalt entity here with all the problems and open questions it entails. But let us continue the discussion of the 3rd LI first and then apply the Husserlian terminology to Gestalt thinking in subsequent sections with more conceptual equipment.

Concept	Formal Ontology (FO) → Species	Material Ontology (MO) → Particulars
Entity (E)	Object (O)	Content (C)
- Part	O-P	C-P
- dependent	O-P-d (objective moment)	C-P-d (perceptible moment)
- independent	O-P-i (objective piece)	C-P-i (perceptible piece)
- Whole	O-W	C-W
- dependent	O-W-d (objective moment of unity)	C-W-d (perceptible moment of unity)
- independent	O-W-i (objective agglomeration)	C-W-i (perceptible agglomeration)
- simple	O-W-s (objective atom)	C-W-s (perceptible atom)
- complex	O-W-c	C-W-c

2.2.4 Relative and Absolute (In)Dependency

Three more distinctions Husserl makes are worth noting. The first distinction is the one between *relative (in)dependency* and *absolute (in)dependency*. Let us take the example of the red cup again. The red cup has as a part the color red. The color red is a moment. It can only find completion in the cup as a whole, because the cup, as a complex whole, has at least one more moment, namely the shape. The whole holds color and shape together and makes them existent only in this togetherness. Thus, the color depends on the cup. The color, however, is not dependent on absolutely everything. If we take the red color of the cup as a species (redness), it is independent relative to its particular shades, which are parts of the color as species. If the upper half of the cup is ruby and the lower half burgundy, or were it to be the other way round, then the cup would still display redness in general, as **O-W** of the shades. However, the particular red as the shades' **C-W** is dependent relative to the shades. This particular color would not be this particular color if the shades were not such and such, say ruby-burgundy-red.³¹ The color of the cup is therefore not absolutely dependent, as it can be independent relative to its parts.

From this kind of perceptual example, Husserl derives a general principle: "A content *A* is non-independent relatively to a content *B*, if there is a law rooted in the Generic Essences *A*, *B*,

³⁰Cf. also Husserl [1975: 6, 34].

³¹I ask the patient reader to let me refrain here from possible counter-examples of cups that change their color when a hot or cold beverage is added. Such counter-examples would entail some notion of temporality and would, for the moment, only over-complicate the already very tricky distinctions Husserl confronts us with. Temporality will come in time, however, because any characterization of PWO is incomplete without taking into consideration a temporal dimension.

which lays down *a priori* that a content of the pure Genus *A* can only exist in or associated with a content of the Genus *B*." [id.: 23] An absolutely (in)dependent part or whole would therefore be (in)dependent relative to all other parts or wholes it is related to. But this is, according to Husserl, just "a limiting case [*Grenzfall*] of the relative." [id.: 22] Furthermore, if the shades *m* of the color are dependent parts relative to the color *w*, then they are also dependent relative to the whole cup *w'*. It is not possible that the shades *m* become independent parts relative to a whole *w'* that is bigger than the whole *w* they are relatively dependent on and if *w'* includes *w*. "Whatever is independent or non-independent in relation to a *B*, also maintains this property in relation to every whole *B'* in relation to which *B* is independent or non-independent – a proposition, whose converse is of course invalid." [id.: 24] The converse is invalid, because a whole *B'* (the red cup as a particular or a species) can be dependent relative to a part *B* (its color red as species), but this does not automatically mean that it is dependent relative to the shades (as particular parts) of *B*. In order to determine relative and absolute (in)dependency, we always have to distinguish between **FO** and **MO**, i.e. between general objects (universals, species, genera) and empirical contents (individuals, instantiations, particulars).

With the distinctions particular/species, dependent/independent and relative/absolute, we can now formulate the following eight rules, which I carefully assume to be preliminarily correct regarding the 3rd LI as discussed so far. Please note that before we come to the conclusion of this chapter in section 2.3, I will revise some of these rules.

- (1) **O-P-d** is dependent relative to **O-W-d** and **O-W-i**, but independent relative to **C-W-d** and **C-W-i**.
- (2) **O-P-i** is absolutely independent.
- (3) **O-W-d** is dependent relative to **O-P-d** and **O-P-i**, but independent relative to **C-P-d** and **C-P-i**.
- (4) **O-W-i** is dependent relative to **O-P-i**, but independent relative to **O-P-d**, **C-P-i** and **C-P-d**.
- (5) **C-P-d** is absolutely dependent.
- (6) **C-P-i** is dependent relative to **O-W-d** and **O-W-i**, but independent relative to **C-W-d** and **C-W-i**.
- (7) **C-W-d** is absolutely dependent.
- (8) **C-W-i** is dependent relative to **O-P-d**, **O-P-i** and **C-P-i**, but independent relative to **C-P-d**.

This is how I suggest deciphering Husserl's 3rd LI with the distinctions made so far. Even if some of these rules should prove to be incorrect (and I invite the critical reader to find counter-examples), it is nonetheless unavoidable to formulate them plainly before we turn to the next distinction.

2.2.5 Founded and Founding I: Towards a Flat Ontology of Pieces

The second distinction is the one between *founded* **P** or **W** and *founding* **P** or **W**. We saw that in **FO** and in **MO**, a part **P** as well as a whole **W** can be either independent or dependent in relation to another **P'** or **W'**. **P** can be (in)dependent in relation to **P'** or **W**. **W** can be (in)dependent in relation to **P** or **W'**. We can say that the particular color of the cup *p* is both dependent on the particular shades *p'* and on the particular or general cup *w* itself. But what does dependency mean? It means that **P** is *founded* by **P'** or **W**, or in other words, it means that **P'** and **W** *found* **P**. Husserl defines this as follows: "If a law of essence means that an *A* cannot as such exist except in a more comprehensive unity which connects it with an *M*, we say that *A as such requires foundation by an M* or also that *an A as such needs to be supplemented by an M*. If accordingly *A*₀ and *M*₀ are determinate instances of the pure kinds *A* or *M*, actualized in a single whole, and standing in the relations mentioned, we say that *A*₀ is *founded upon M*₀, and that it is *exclusively* founded on *M*₀ if *A*₀'s need for supplementation is satisfied by *M*₀ alone." [id.: 25]³² As a **P** can also be dependent on a **W**³³, not only on another part **P'**, it is also possible that **W** *found* **P**. Husserl goes further and defines, in a Spinozistic fashion, six analytic propositions or theorems that are supposed to follow from the formal possibility that **P** can be founded by **P'** or **W**.³⁴ For the purposes of my project, however, it is sufficient to know about the distinction between founded and founding **P** or **W** without going into analytic entanglements.

Already taken by itself, without analytical consequences, the distinction between founded and founding **P** or **W** is fairly suggestive. It seems to me that it is mainly in the context of this distinction that Simons' characterization of Husserl's 3rd LI "as being highly suggestive of possible fruitful developments" [1982: 113–4] proves true. In fact, the distinction between founded and founding can suggest both a vertical ontology and a flat ontology, i.e. an ontology with and without hierarchies. It suggests a flat ontology, because it suggests that if **P** and **P'** found each other, it is no longer necessary to stipulate a **W** as an additional entity. **P** and **P'** could just enter into a founding relation "without external assistance" [*ohne äußeren Sukkurs*] [id.: 34]. Thus if the particular color *p* of the cup and the particular shape *p'* enter into a

³²Cf. also the definition of a moment in the light of 'foundation' by Mulligan et al. [1984: 294]: "Moments may accordingly be defined as follows: *a* is a moment iff *a* exists and *a* is *de re* necessarily such that either it does not exist or there exists at least one object *b*, which is *de re* possibly such that it does not exist and which is not a proper or improper part of *a*. In such a case, *b* is a fundament of *a*, and we say also that *b* founds *a* or *a* is founded on *b*. If *c* is any object containing a fundament of *a* as proper or improper part, but not containing *a* as proper or improper part, we say, following Husserl, that *a* is dependent on *c*. Moments are thus by definition dependent on their fundaments. Objects which are not moments we call *independent objects* or *substances*. There is nothing in this account which precludes fundamenta from themselves being moments, nor the mutual foundation of two or more moments on each other." Cf. also Smith et al. [1983: 80] on immediate and mediate founding relations in Husserl's 3rd LI.

³³"Non-independence in and relative to the whole *W* or to the total range of contents determined by *W*, characterizes each of *W*'s partial contents which can only exist as parts, and as parts of a sort of whole represented in this range. Every partial content regarding which this is not true, is called *independent in, and relative to, the whole W*." [id.: 22]

³⁴Cf. for example the third proposition: "If *W* is an independent part of (and so also relatively to) *F*, then every independent part *w* of *W* also is an independent part of *F*." [id.: 26] In her [1929] article 'Zur Husserlschen Lehre von den Ganzen und Teilen', E. Ginsberg critically discusses and even visualizes these six propositions. She concludes that only two of them (the first and the fifth) are true. Simons [1982: 138] in turn objects to Ginsberg's article: "Ginsberg does not however distinguish between foundation and relative dependence, and so some of her attempts to show that Husserl's theorems are not all valid are vitiated."

founding relation, they would not have to depend on a more inclusive whole w , the particular red cup, anymore (against rule 5). Instead of a w in itself, the red cup would be identical with the composition \widehat{pp}' of its mutually founding parts p and p' . “By a Whole we understand a range of contents which are all covered by a single foundation without the help of further contents. The contents of such a range we call its parts. Talk of the *singleness of the foundation* implies that *every content is foundationally connected, whether directly or indirectly* [we will see what this means in a moment, M.S.], *with every content.*” [id.]

What Husserl spells out for **C** here, also counts for **O** in general. If the founding relation between two or more **P** is sufficient for them to form a unity ‘without external assistance’ of a more embracing whole, then this ‘unity’ is not a “‘real predicate’, a ‘positive’ ‘real’ content” [id.: 37], but it is a mere “*categorical predicate*” [id.] of the parts. This is a very crucial point and it leads us to a conception of parts and wholes that has been called ‘Composition as Identity’.³⁵ Indeed, not having to postulate an additional whole with properties genuinely belonging to the whole and not to any of its parts to account for the dependency of parts has two advantages. Firstly, it undermines any theory that would declare this additional whole as existent, which would, despite any other advantages such a theory might have, unnecessarily burden our ontological inventory, i.e. the entities we accept as existing. A **W** on which both **P** and **P'** depend, whether or not it is independent relative to **P** and **P'**, could count as an additionally existing entity. In contrast, the founding relation \widehat{PP}' is not something additional to and above **P** and **P'** and therefore prevents any potential declaration of **W** as an additionally existing entity. Instead, it is a contingent aspect that does not affect their respective essences, but it follows from them as a possible consequence of the parts’ innate qualities.³⁶ In more recent terms, we could say that if a thus founded whole has qualities that the parts do not have, e.g. if the four lines $||||$ enter into a founding relation such that they result in a square \square , then the square’s quality of being rectangular, which is not possessed as such by the lines, is only a predictable and non-emergent ‘resultant property’ that does not have any influence on the individual nature of each line.³⁷ Since resultant properties are not emergent entities or qualities, but are already contained in and, in principle, predictable through the realm of logical possibilities of founding relations, they do not augment the list of items composing our ontological inventory.

Whereas anxieties about so-called ontological inventories became very important for ontolo-

³⁵Cf. section 3.1.

³⁶Cf. on this difference between relations and wholes A. Angyal’s 1939 article ‘The Structure of Wholes’. Therein, he calls wholes ‘systems’ and states that in “*a system the members do not hang together among themselves but they hang together in the whole. The constituent parts of a system always point beyond themselves; they point toward a superordinate, more inclusive factor, the system in and by which they are connected.*” [Angyal 1939: 30] In the case of relationships, on the other hand, the “object enters into a relationship with another object, thanks to its immanent qualities. Most relationships are based upon identity, diversity, or similarity (partial identity with partial diversity) of the objects, that is, on immanent attributes. The members of a system, on the contrary, do not become constituents of the system by means of their immanent qualities, but by means of their distribution or arrangement within the system. The object does not participate in the system by an inherent quality but by its position in the system.” [id.: 28] Thus relations between entities do not necessitate additional wholes, while the arrangement of entities (and moments are always arranged entities, as we will see in subsection 2.2.6) requires the existence of further wholes.

³⁷Cf. Bedau [2004: 201], Boi [2017: 190], Heil [2017: 45], and section 7.3 below for a characterization of ‘resultant properties’ and their counterpart ‘emergent properties’.

gies and part-whole theories after Husserl, he himself stressed the second advantage, namely the avoidance of an infinite regress the postulation of a **W** would entail. "If then *U* is the moment of unity of *A* and *B*, there must be a new 'moment' of unity *U*₁, for *A* and *U* (since these two are unified) and again a new *U*₂, for *B* and *U*; and just so new 'moments' *U*₁ and *U*₂, for *U* and *U*₁, and for *U* and *U*₂ respectively, and so on *in infinitum*. [...] Our conception avoids these endless regresses of parts which are always splitting into further series. Nothing *really* exists – in the sense of being a possible object of sense-perception – beyond the aggregate of a whole's 'pieces', together with the sensuous forms of unity, which rest on these pieces conjointly. Unity is conferred on the 'moments' in the 'pieces', as also on the 'moments' of unity *and* the 'pieces', by the foundational relations in the sense of our definition." [id.: 37] This passage is very instructive, because we learn from it that together with the existence of wholes, Husserl also denies the (co-)existence of founded parts, i.e. moments. It seems that only unfounded parts, i.e. pieces, can found moments by entering into founding relations. Moments do not found other moments or pieces or wholes, because they cannot exist from the outset if there is no whole in which they could find completion. This is a very strong cut into the conceptual apparatus Husserl offered us so far. For our red cup it would mean that neither the color, nor the shape can enter into a founding relation as and for which the red cup exists as a 'sensuous form of unity'. If such a founding relation would form a whole with a proper content, then this whole could again be related to one of its moments, which would cause an infinite regress.³⁸ By contrast, it has to be the pieces of the cup that make up the cup, and the pieces are nothing but its material parts. Only pieces can enter into relations of foundation that are not themselves something additional on which the pieces depend. The moments 'color' and 'shape' are but abstract parts of the material, concrete pieces. Without the pieces, there could be no *unity of moments*, because "*all wholes*, with the sole exception of these which break up into 'pieces', lack binding forms of unity." [id.: 35] We have to keep this point in mind, because it is on this kind of material composition on which theories claiming that the composition or unity of parts are ontologically identical with the sum of the parts themselves are based, even if they do not explicitly draw on Husserl.

In other words, we could say that if, according to this first suggestive reading of founding relations, only parts exist that are both unfounded in a downward direction (they do not depend on smaller parts) and unfounded in an upward direction (they do not need to find completion in more embracing wholes), Husserl basically flattens his ontology out. The only entity **E**, both as object **O** or as content **C**, that exists has nothing 'under' it on which it would depend, and nothing 'above' it on which it would also depend. If we accept only pieces and their contingent relations as being real, then everything that exists, exists alongside each other on a horizontal plane and can relate to another, but does not have to do so in order to exist. Of course, pieces cannot form unities in arbitrary ways. Like pieces of a puzzle, they have to be arranged somehow, according to some a posteriori laws for instantiated species (particulars) or a priori laws for species, in order to found an object.³⁹ But these are only horizontal

³⁸According to Smith et al. [1982: 49], what Husserl suggests here is a 'contentless relation of foundation': "That is, all that is truly unifying are relations of foundation. Such a contentless foundation is necessary, since otherwise the classical infinite regress [...] is threatened. [...] Foundation relations put a stop to this regress, since only contents can have a foundation, not foundation relations themselves."

³⁹"We cannot at will make the same content at one time part of one sort of whole, at another time part of another sort. To be a part, and, more exactly, to be a part of some determinate sort (a metaphysical,

relations of co-existence. There is no hierarchy of parts in a puzzle, no necessary sequence of arrangements. Every piece is constitutive on the same plane and it does not matter for the composition if I start in the bottom left corner or in the middle or anywhere else. Moreover, if my red cup falls down and breaks into pieces, it is not the cup that is broken, because it never existed independently in the first place, but the founding relations of the pieces are broken and – theoretically – can be re-established. Ontologically, pieces exist irrespective of their contingent arrangements, disarrangements or separations. Husserl thus lays the groundwork for a *flat ontology* in which there are no ontologically charged hierarchies between parts and wholes. However, there is another suggestive reading of founding Husserl offers, and this reading prepares the groundwork for a *vertical ontology*. The flexibility of Husserl's formal ontology is that we can go in both dimensions. The problem is, however, that each dimension leads to a completely different notion of how a part-whole ontology should picture reality.

2.2.6 Founded and Founding II: Towards a Vertical Ontology of Moments

Now we come to the third distinction, which is the distinction between *nearer* and more *remote* parts of the whole. Let us wind back to the beginning of section 2.2.5, when I introduced Husserl's notion of founding and founded **P** or **W**. There we saw that **P** is *founded* by **P'** or **W**, if it is dependent relative to **P'** or **W**. In this case, **P'** or **W** *found* **P**. A piece, whether **O-P-i** or **C-P-i**, is absolutely or relatively independent and therefore, in itself, unfounded. It can enter into founding relations with other pieces, however, whereby this relation is the unity they compose. We can call this unity a whole, but we saw that it is debatable whether this whole could exist on its own without its pieces. If we imagine a triptych, a painting with three co-existing pieces *l* (left), *m* (middle) and *r* (right), then there is a unity relation if the pieces are arranged in the order \widehat{lmr} . However, the pieces do not vanish into nothingness, like moments would do, if we re-arrange them arbitrarily as, for example, $\widehat{m\bar{l}r}$. What would vanish in this re-arrangement are the moments that depend on the pieces' unity, like the interplay of colors, the relations of brightness and hue, geometrical patterns, levels of depth, and, with this, the overall semantic layer of the artwork. We can say that in \widehat{lmr} , *l* and *m* are *immediate*, i.e. *nearer* pieces and *l* and *r* are *mediate*, i.e. *more remote* pieces. The distance between *l* and *r* in \widehat{lmr} is greater than that between *l* and *m*, but as the pieces would equally exist in $\widehat{m\bar{l}r}$, distances do not matter for the existence of pieces themselves. Sokolowski gives a similar example: "A finger is a piece of the hand, which in turn is a piece of the body, but there is no necessity of mediating the distance between finger and body by the hand; I can consider a finger an immediate part of the body itself. Pieces are arbitrarily called 'near' or 'far' parts of their wholes. They have none of the necessary hierarchical structure of mediation found in moments." [Sokolowski 1968: 540]

Thus unlike pieces, moments are embedded into a hierarchical structure. This hierarchy is not only reducible to how we perceive particular moments, but it is an a priori law of the moments' species: "*The order of mediacy and immediacy is based by law on the pure Genera*

physical or logical part or whatever) is rooted in the pure generic nature of the contents in question, and is governed by laws which in our sense are *a priori* laws or 'laws of essence'. This is a fundamental insight whose meaning must be respected in all our treatments and formulations." [Husserl 2001: 39]

involved." [Husserl 2001: 28] Whereas the distance of pieces is arbitrary, because it does not have an objective measure on which the individual existence of a piece is based,⁴⁰ a moment always necessitates a more embracing whole for its own completion. According to Sokolowski [2000: 24], "there can be several layers of founding: shade is founded upon hue, which in turn is founded upon color. In this case, shade is only mediately founded upon color (via hue), while hue is immediately founded upon color. Pitch and timbre, however, are both immediately founded upon sound." Such vertical, a priori (species) as well as a posteriori (particulars) layers of founding are missing in the case of pieces.

On the one hand, we can say that any combination of any distance of **O-P-i** is independent relative to any **O-W** it can found. By the same token, any combination of **C-P-i** is independent relative to any **C-W** it can found. It would even be misleading to classify such combinations as 'wholes', because this would imply an (existent or non-existent) additional entity. They are better labelled as 'aggregations' or 'unity relations', whereby the unity is the relational network of the pieces, without being an entity above and beyond them. On the other hand, any combination of **O-P-d** is dependent relative to any **O-W** in which it finds completion. By the same token, any combination of **C-P-d** is dependent relative to any **C-W** in which it finds completion. Both **O-P-d** and **C-P-d** have to be founded by a more embracing whole in order to exist. The important point here is the hierarchy of moment-layers in the second case. We *descend*, for example, from a melody to its tones, from the tones to their quality, from the quality to the intensity.⁴¹ Likewise, we can *ascend* - with many intermediary levels - from a melody to the exposition of a musical composition (say a sonata), from there to the whole composition, to a concrete concert, which is part of an evening program that in turn is part of a week-long music festival. Every level is itself founded by its nearest higher level and thus also by every more remote higher level, because "if A is a non-independent part of B, and B a non-independent part of C, then A too is a non-independent part of C." [Husserl 2001: 26] If this festival were not to take place for any reason, then the melody would not come into existence, at least not as a particular moment of the particular instantiation of the sonata. The festival in general does not depend on the instantiation of the melody it founds. Although it would not be *exactly this* particular festival without the melody, it is still, as *a* festival, independent relative to the particular melody. Without *any* melody, or rather *any* concert, however, the festival would not be a festival, which is why ticket holders would probably claim their money back. But whether or not the festival is dependent on its parts, it is always something over and above its moments. It is a whole *in* which a sonata can be performed that in turn *contains* a melody. The notion of near and remote moments strongly suggests a vertical dimension in which every entity **E** of a higher position includes an entity **E'** of a lower position.

The challenge we have to deal with is that Husserl suggests substituting the ontological

⁴⁰"But in themselves the remotest of these parts [pieces, M.S.] are no further from the whole than the nearest. The parts in any case also owe their serial order to the serial order of our divisions, and these latter have no objective foundation. In an extended [physical, M.S.] whole there is no division which is intrinsically primary, and no definitely delimited group of divisions forming the first grade in division; from a given division there is also no progress determined by the thing's nature to a new division or grade in division. We could *begin* with each division without violating an intrinsic prerogative. Each mediate part can, according to one's chosen mode of division, likewise count as an immediate part, each immediate part as a mediate one." [id.: 31]

⁴¹Cf. Husserl [2001: 31].

independence of wholes in relation to their parts not only in the case of pieces, but also in the case of moments. By entering into relations of foundation, pieces can create wholes as 'unity relations' or 'agglomerations'. In so doing, the pieces are not dependent on their agglomeration. I throw my red cup on the ground, it breaks, and I have no cup anymore, because the pieces are no longer arranged in a certain unity. The pieces continue to exist, however, whereas the shape of the cup and its color as well as the shades of the color, as moments, do not. Unfortunately, they depended on the cup as a whole, which existed as a particular whole before it fell down and broke. But if we follow Husserl and cancel the notion of wholes from the context of pieces and keep only **O-W-d** and **C-W-d**, then no moment could stick to a more embracing whole that is independent in relation to the moment. A moment could not be real at all anymore, because there would be no – relative to the moment in question – ontologically independent whole from which it receives its completion, i.e. its existence. Therefore, as we already saw, Husserl claims that nothing “*really* exists – in the sense of being a possible object of sense-perception – beyond the aggregate of a whole's 'pieces', together with the sensuous forms of unity, which rest on these pieces conjointly. Unity is conferred on the 'moments' in the 'pieces', as also on the 'moments' of unity *and* the 'pieces', by the foundational relations in the sense of our definition.” [id.: 37]

Yet we should inquire if there is not a problem in this kind of reasoning. On the one hand, a moment is, like a piece, not supposed to be founded by a more embracing whole that is, as a species, independent relative to the particular moment and in which this moment would find completion. On the other hand, a moment can still be a moment within a piece, and a piece is by definition unfounded. If we talk about moments, we would still have to postulate an independent whole from which the moment gains completion, only with the restriction that this whole, as a piece, is in itself an absolutely independent entity. However, one reason why this restriction seems problematic to me is that in many cases in which moments are involved, it is impossible for the whole in which they find completion to be a piece. A combination of tones, for example, can be a sequence of moments of a melody. The melody itself can be played in a different octave or with different instruments. It is thus, on a general level, independent relative to its particular moments. But the melody is not a piece. Pieces are decomposable without existential loss, but a melody of which only a tiny fragment is played would not be a melody anymore. Pieces do not need to postulate more embracing wholes, but in most cases, a melody is embedded into a musical composition and receives its identity from that. It would be very counter-intuitive to claim that melodies or musical compositions do not exist, because they wrongly presupposed ontologically independent wholes. The same holds true on the level of species and general categories. The species 'color', for example, cannot be subdivided like a piece into redness, blueness, greenness and other subspecies such that these sub-species are separable from the species. These subspecies always remain colors and thus only find completion in the species 'color'. Furthermore, this species includes, by definition, other moments such as light, a certain functionality of our eyes and brains, the nature and structure of surfaces on which these colors appear as well as the manifold cultural meanings we associate with a certain color. In the whole color, all of these moments come together and refer to another, which is why no moment such as 'redness' or other subspecies and sub-subspecies (e.g. shades of redness) can be isolated like a piece without losing its significance and vanishing into nothingness.

Another reason why this restriction is problematic is closely related to the first one. In

his need to make clear distinctions, Husserl draws the demarcation line between pieces and moments too strictly, as if one part either is a piece or a moment, but never both at the same time. Sokolowski [2000: 23–4] convincingly observes, however, that a “particular item can be a piece in one respect while being a moment in another. For example, an acorn can be separated from its tree, but as an object of perception it cannot be separated from a background; to be perceived, the acorn has to be seen against a background of some sort or other.” My red cup, to give another example, can be a piece of a collection of tableware I bought in a store. The cup does not depend on the collection in order to exist, it could also be sold as a single piece. In another respect, the same cup, filled with freshly brewed coffee, can be a moment of a perfect morning. Relative to the morning as a whole, the cup would not be conceivable without the coffee as another moment. Taken as a moment, the cup depends on the whole as well as, indirectly via the whole, on other moments. It can also be a moment of the aesthetic decoration of the breakfast table. But if the cup were to remain empty, if it were to remain in the cupboard, then it would not participate in, i.e. not exist as a part of the perfect morning. It would only exist as a physical piece inside the cupboard, but outside the whole which is the perfect morning. From the evidence of a descriptive point of view, we do not live in a world where there are dividable collections of tableware, but no perfect mornings. Again, the same holds true not only of particular contents (**MO**), but also of species and objects in general (**FO**). A tree, taken as a species, can be a piece, as it is separable into branches, trunks, leaves and roots. In this regard, a forest is just a dividable aggregation of pieces of tree and other biophysical entities whose division does not matter for the forest, taken as a piece itself. This is a possible as well as – sadly, one might say – an actual picture. But a tree, again taken as a species and as a general object independent of our perception, could not exist without other objects such as water, earth and sunlight, which are equally inseparable moments of a forest and of nature as a whole. If we want an ontology that describes reality in its most general aspects, we cannot simply reduce the definition of existence to pieces alone, since one and the same entity can be a piece and a moment at the same time, i.e. being a moment and being a piece can ‘coincide’.⁴²

With his notion of foundation, Husserl unfolds a crossroads that shows a horizontal as well as a vertical direction, thereby providing the groundwork for both a flat and a hierarchical part-whole ontology. The difficulty is that, at least in the 3rd LI, he sometimes suggests taking only the horizontal road, by claiming that only pieces really exist, side by side, i.e. dividable or constructible without bringing other entities into or out of existence. In other passages, however, he claims that moments can exist under the condition that there are wholes in which they find completion. But wholes have to exist in order for moments to exist. This means that we can climb up and down on what could be metaphorically called ‘the ladder of being’. Sometimes, however, Husserl leaves this question explicitly open, like when he writes that

⁴²Cf. the example of the head of a corporation given by Smith et al. [1982: 40–1]: “The head of a corporation *c*, for example, *qua* head of *c*, is not a mere *piece* (independent part), since of course should the remainder of the corporation cease to exist then he too (in his capacity as its head) will also pass out of existence. This is not to deny that the moment of *c* which is its head is not – in the relevant interval of time – coincident with the independent whole which is the corresponding human being. But coincidence is not identity, as the proponents of an exclusively extensionalist ontology – for whom all strata collapse onto a single stratum (the isolation of which is presumed to be somehow unproblematic) – would have us to believe.” Cf. [id.: 42] for more examples of this sort and [id.: 49] for the difference between coincidence and identity.

“[n]on-independent objects are objects belonging to such pure Species as are governed by a law of essence to the effect that they only exist (if at all) [!] as parts of more inclusive wholes of a certain appropriate species.” [Husserl 2001: 12] It is impossible to proceed from here without making up our minds autonomously.

On all accounts, it would be unwise to just ignore or argue against either the horizontal direction or the vertical one. Husserl's part-whole ontology itself, as well as many examples we can think of, indicate that both directions are indeed justified and should not be played off against each other. It is obvious that we will arrive at a richer ontology if we account for pieces with agglomerations as well as for moments with wholes, both on the level of contents and objects. To me it seems that such a rich ontology does a better job in describing reality than an ontology that reduces all entities to their material pieces alone just in order to avoid the postulation and proliferation of entities that may – as Quine once put it in another context – ‘overpopulate’⁴³ our ontological inventory. Husserl argues convincingly that in the case of pieces and their founding relations, it is not necessary to postulate additional wholes with ontological value. Thus, for pieces and their relations, we should not bloat the amount of entities we hold to exist, and therefore we should stop using the term ‘wholes’ in the context of pieces. Reality can be kept ‘flat’ as regards pieces. Only in the case of moments, would I suggest upholding the vertical line and allowing for wholes to exist dependent on as well as independent of and ‘above’ moments. In so doing, we would arrive at a formal and – consequently – material ontology that can be visualized in a simple Cartesian coordinate system:

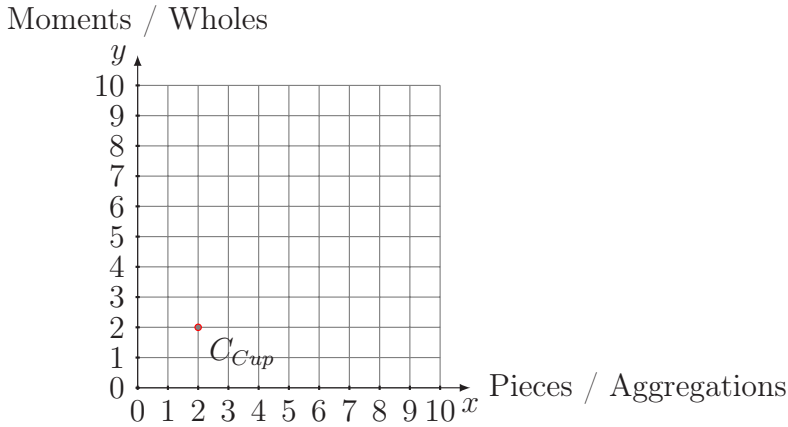


Figure 2-1: *Vertical and Horizontal*

We can locate any entity **E** with part-whole structures within this coordinate system, consisting of a horizontal x-axis for pieces and a vertical y-axis for moments and wholes. Let's say that our *particular* red cup, as C_{Cup} , consists of two material pieces: a pot and a handle. Thus it lies on the second position of the x-axis: $x = 2$. If it were to fall down and break into five pieces and we were still to decide to call it a cup (a ‘broken red cup’ maybe), we could locate it on the fifth position of the x-axis. The distances between the positions of the x-axis indicate how near or remote the pieces of **E** are towards each other. But these distances do not determine any dependency relation. For every **E** (thus for every content and for every object), every position on the x-axis could exist without any other position, just not in this or that unity relation: The

⁴³Cf. Quine [1953: 4].

pot could exist without the handle and vice versa. To be more precise, we can say that the distance $x = \overline{0,2}$ is the agglomerated unity relation of the distances $x = \overline{0,1}$ (the pot) and $x = \overline{1,2}$ (the handle). Every such distance is divisible again into smaller pieces, because the pot and the handle are breakable into, for example, half a pot, a third of a handle, etc. Now let us say that the red cup has two immediate moments: its concrete redness and its concrete shape. We therefore move to position $\mathbf{C}_{\text{Cup}}(2,2)$. Also the distances on the y-axis are subdivisible. But here, every sub-division is a smaller moment within a whole and therefore depends on the larger number. We can say that $y = \overline{0,1}$ is the moment of redness and that every point between $y > 0$ and $y < 1$ is a shade of redness, which is itself a moment of the cup. Therefore, the shades are mediate moments of the cup.

Entities that are only considered as pieces can be located on the x-axis with $y = 0$, and entities that are only considered as moments without material dimension can be located on the y-axis with $x = 0$. But I think that these are only marginal cases. If an entity has the coordinates $x > 0$ and $y > 0$, then we can take it as consisting both of pieces (as a unity relation) and of moments (as a whole). This is probably the case with most entities, both as species (objects) and as particulars (contents). Furthermore, we can integrate the eight rules given at the end of section 2.2.4 into this coordinate system. Of course, this system has to be adapted dynamically to every entity we want to determine with it. Let us adapt it to the red cup that we located at position $\mathbf{C}_{\text{Cup}}(2,2)$. We determined the red cup as a content, not as an object. Therefore, only rules (5)–(8) are applicable right now. Rule (5) stated that $\mathbf{C-P-d}$ is absolutely dependent. If we take $\mathbf{C}_{\text{Cup}}(2,2)$ as a perceptible moment (for example of a perfect breakfast), it is dependent on every other position of the coordinate system in an upwards direction.⁴⁴ Rule (6) stated that $\mathbf{C-P-i}$ is dependent relative to $\mathbf{O-W-d}$ and $\mathbf{O-W-i}$, but independent relative to $\mathbf{C-W-d}$ and $\mathbf{C-W-i}$. If we take $\mathbf{C}_{\text{Cup}}(2,2)$ as a piece (for example of a collection of tableware), it is only dependent on higher species (for example cups in general), but not on higher particulars, as these do not exist in the case of pieces. All particular pieces co-exist on the same line. Rule (7) stated that $\mathbf{C-W-d}$ is absolutely dependent. If we take $\mathbf{C}_{\text{Cup}}(2,2)$ as a whole (for example of redness and shape), it seems to be dependent on its moments. Therefore, it is dependent on every position in a downwards direction. Finally, rule (8) stated that $\mathbf{C-W-i}$ is dependent relative to $\mathbf{O-P-d}$, $\mathbf{O-P-i}$ and $\mathbf{C-P-i}$, but independent relative to $\mathbf{C-P-d}$. If we take $\mathbf{C}_{\text{Cup}}(2,2)$ as an agglomeration of pieces, i.e. as a unity relation, then it is dependent on every species (\mathbf{O}) in an upwards and a downwards direction. A concrete red cup could neither exist without redness in general (downwards), nor without the category of drinking vessels (upwards). On the one hand, by being only a relation of pieces, $\mathbf{C-W-i}$ seems to depend on the existence of the single pieces (the pot, the handle). On the other hand, being the agglomeration of pieces makes it itself a piece, which is made up of two smaller pieces. But pieces are by definition independent. If the cup falls down, breaks into five pieces and we glue it together and have the same cup again, then the cup was evidently not dependent on its two pieces ‘pot’ and ‘handle’. Therefore, the cup is independent on every position towards the left and independent relative to any further agglomeration of pieces towards the right as well as independent relative to any moments on the vertical axis. The agglomeration of pot and handle could exist even

⁴⁴By being a piece on $x = 2$, $\mathbf{C}_{\text{Cup}}(2,2)$ does not depend on any other position towards the left or right. A part can only be founded by, i.e. dependent on a whole. But as I suggested that we stop talking of ‘wholes’ in the context of pieces, the dependency of moments only takes place on the y-axis.

if it were blue instead of red. Similar adaptations of the coordinate system can be made for objects instead of contents. However, it is not the development and perfect adaptation of the coordinate system itself that is the aim of this section. This coordinate system only helps us to understand, as a visual model *of* some aspects of Husserl's formal ontology, what the actual aim of this section, as a moment of this project in general, consists in. The coordinate system just outlined is thus a heuristic tool, i.e. a visual model *for* the determination of the ontological possibility of PWO on a conceptual level.

2.2.7 Continuity and Discontinuity: The Possibility of PWO

So far, Husserl's part-whole ontology has been valid both in a formal (**FO**) and in a material (**MO**) sense. Everything that can be said about particulars as contents has been just a specification of what counts in the case of species as objects. This basic correspondence of the a priori and the a posteriori lies at the heart of the whole 3rd LI, because on the one hand, it ensures that formal part-whole principles are not just hypothetical postulates but can be verified and exemplified in contents of empirical perception. On the other hand, this correspondence allows the empirical perception of parts and wholes to be traced back to formal principles in order to guarantee the objectivity and ontological necessity of what appears to be contingent and subjective in perception. This correspondence, however, is explicitly suspended in one case, namely in Husserl's description of what I think may be – next to his systematic terminology – one of the most fruitful aspects of his ontology beyond his own philosophy. It is the phenomenon that one and the same entity sometimes and somehow appears as a unified whole and sometimes and somehow as a diversity of moments, without being reducible to one side alone. This is what I would like to denote as 'PWO'. Husserl's short reflection on it in §§ 8 and 9 of his 3rd LI justifies once more the choice of taking his formal ontology as a starting point for the determination of the ontological nature and status of PWO. At the same time, however, Husserl's reluctance to include PWO as an a priori principle of **FO** will urge us to leave his formal system behind in order to approach the inductive method and the empirical realm, for which Husserl indeed admits – albeit not by this label – the occurrence of PWO.

How does Husserl describe PWO? When we look at the coordinate system that visualizes (and of course simplifies) Husserl's part-whole ontology, we can see two axes. The x-axis depicts pieces and their relations, while the y-axis depicts moments and wholes. We saw that the distances between two points of the same axis describe either a (agglomerated) piece on the x-axis, or a range of moments of a whole on the y-axis. But now we have to specify this picture with a distinction Husserl offers us: the distinction between *continuous* and *discontinuous* parts. Discontinuous parts are pieces, and their discontinuity consists in the fact that between each piece, there is a gap. Pieces can be separated from each other by the recognizable gap between them. Every point of the x-axis, i.e. every piece and agglomeration of pieces, is thus separated and separable from every preceding and subsequent point. The appropriate movement from one point on the x-axis to its neighboring point is a jump. "A content, accordingly, is intuitively separated in relation to other contents if it does not flow over into them without a point of difference: it can thus make itself count on its own, and stand forth independently." [id.: 14] This is different in the case of moments. Moments are continuous parts. They merge into each other, they penetrate each other. There are no gaps in the y-axis, but only gradual transitions.

Every point merges into the preceding and subsequent one, mediated by the whole they need to exist. “The intuitively unseparated content forms a whole with other coexistent contents, but is not cut off in this manner within the whole; it is not merely bound up with its associates, but blends with them.” [id.] As Husserl is here only talking about **MO**, he can rightly state that **C-P-d** ‘forms’ (i.e. *founds*) a whole, because, as we have defined in rule (7), **C-W-d** is dependent on **C-P-d**.

Now we are about to arrive at the core of the ontological possibility of PWO that is outlined in Husserl's 3rd LI. We saw that pieces are separable from the agglomerations or unity relations they may form. It is not necessary to think of or perceive the agglomeration in order to think of or perceive a single piece. For moments, on the other hand, it is necessary to think of or perceive a whole in order to think of or perceive a moment. One moment can never be there without another moment of the same whole due to the continuity the moments entail. Taken as such, the moments of a content are like arrows that shoot at each other continuously. We cannot grasp one of them without being immediately carried to another one and to another one and so forth. Nevertheless, it is possible to say that a whole includes this or that moment. It is possible to notice, for instance, that the cup is red (one moment) without any need to simultaneously notice that it is also shaped (another moment). To do so, we have to distinguish the otherwise continuous moments from the perspective of the whole in which and with which they are fused. “The non-independent moments of an intuition, are not mere parts, but in a certain (notionally immediate) manner they must also be regarded *as* parts: they cannot be separately noticed unless all the concrete contents, in which they are contained, have been stressed as wholes: this does not mean that they become *objects* in the pregnant sense of the word. A figure or colour cannot be separately noticed unless the whole object [content? M.S.], which *has* the figure or the colour, stands out in relief.” [id.: 13–4] Thus, unlike in the case of discontinuous parts, we cannot grasp a moment, i.e. we cannot say that a moment is indeed a part, unless we notice it as a part, which we paradoxically do by noticing the whole in which the moment exists. But at the same time, a whole is just a whole because it has parts, whether they are dependent or independent.

Wholes and parts are terminologically as well as ontologically correlative. Just as every moment points to a whole in order to be *distinguished as* a part and thus in order to *exist as* a part, every whole points to each of its moments in order to be *distinguished as* a whole and thus to *exist as* a whole. This happens when we try to unhinge, i.e. single out one moment of the continuity in which it is fused with the other moments and with the whole. Only then does it appear that this “fusion is not a fading into one another in the manner of the continuous, nor does it remove all separateness, but it is nonetheless a sort of peculiarly intimate mutual interconnection which must at a stroke set the whole complex of interpenetrating moments in relief, if only once a single discontinuous moment has provided the right conditions.” [id.: 16] In other words, when a whole stands out in relief (is a figure with its moments as ground), then – whether simultaneously or diachronically – the whole is backgrounded in order to foreground one or more or all of its moments, i.e. to set them into relief, only to give way again to the foregrounding of the whole etc. We should keep in mind this ongoing back-and-forth movement of foregrounding and backgrounding, because it is identifiable both in conceptual metonymy⁴⁵

⁴⁵Cf. chapter 5.

and in meaningful Gestalt perception.⁴⁶

A whole is always a complex whole, because it is made up of moments. If the moments, however, were to be completely continuous and indistinguishable, then the whole would wrongly appear as simple, as an atom, as having no moments at all. A whole can only manifest its actual complexity by presenting its moments *as* moments, not or not only as an indistinguishable, unanalyzable fusion of moments. This, in turn, is only possible if at least one moment is singled out from the continuity at least temporarily, which is, however, only visible through the perspective of the whole. We go in circles here, we follow the *oscillation* back and forth. This imports that not only moments and moments, but also the whole and its moments interpenetrate each other, provided that the whole is dependent on its moments like the moments are dependent on their whole (rule 7 above). Husserl describes this interplay of part and whole already in his *Philosophy of Arithmetic*: “We grasp the quasi-qualitative character of the whole intuition as something simple, and not as a *collectivum* of contents and relations. But what is simple to our first apprehension turns out upon subsequent analysis to be something complex. [...] If we afterwards find that which originally seemed simple to be something that is in truth complex, we do not thereby apprehend it as a mere multiplicity. Complexity is not multiplicity pure and simple, but rather is a multiplicity of parts united into a whole in the narrowest sense of the word. There is therefore no disadvantage in the fact that we pick out the quasi-qualitative Moment [the whole, M.S.] in the manner of something simple, and that it nevertheless is subsequently to be analyzed into a multiplicity of parts noticeable in their own right.” [Husserl 2003: 216–7] In this regard, it may seem trivial that a content of perception can be one simple whole and a complex of moments at the same time (e.g. 1 cup = 1+n moments). However, this dynamic switching of parts and whole becomes remarkable and even wondrous when a simple whole displays different qualities than its moments, or when a complex whole is qualitatively different from itself as a simple whole. This would imply that one and the same entity comprehends different layers of qualities and meanings, sometimes even opposing ones, like when an arrangement of *round* dots forms the shape of an *angled* square and an oscillation between roundness and angularity takes place within or as one single entity. We will see many examples for this in the discussion of Gestalt theory in chapters 6 and 7.

The idea of PWO, at least as far as we can carve its primal delineations out from Husserl's formal part-whole ontology, requires a double focus. Firstly, PWO is only possible in the case of moments and wholes, not in the case of pieces and agglomerations. This is because PWO relies both on the continuity and on the discontinuity of parts. Only by mediation through a whole can parts be seen as continuous and discontinuous at the same time. Pieces, which we can also think of as material parts, do not create wholes in this sense and are not created by wholes. Ontologically, they are never continuous, but self-sufficient and independent. Even if a piece has a relation with another piece and thus establishes an aggregation, there is no oscillatory movement between the aggregation and the single pieces, because neither the aggregation, nor the single piece needs to refer to something else in order to exist. In a certain sense, aggregations of pieces are nothing but pieces in their own right. Every piece is dividable into ever smaller pieces (if it is not an atom) or aggregatable into ever bigger pieces and can therefore be considered as an aggregation as well as a piece, just as every number can be considered as a sum of smaller numbers and as a summand of bigger numbers. This act of

⁴⁶Cf. chapter 7.

division or aggregation, however, needs to come from an external force (something breaks the cup; somebody divides the number or adds it up), whereas the fluctuation of moments and wholes is an internal process that conditions their correlation. Hence, we can state that the horizontal line of pieces involves stasis and stability, whereas what happens on the vertical line of moments and wholes should be regarded as dynamic and unstable (or, to anticipate a later characterization of PWO: multistable⁴⁷) due to the fluctuation or oscillation between moments and whole. As every oscillation is, by definition, a movement, we have to focus on the y-axis, but without ignoring or neglecting the x-axis, as most or all entities we encounter in reality, depending on what we take to be real, are locatable in the ontological and perceptible area of $x > 0$ and $y > 0$.

Secondly, Husserl denies that what I call PWO is an ontological category of **FO**. Instead, if we discern one moment from the perspective of the whole and therefore endow it with a perhaps instable and dynamic, but recognizable, discontinuity in order to see the whole *as* a (complex) whole and a moment *as* a moment, “we are dealing with differences of ‘subjective’, intuitive materials [*vage ‘subjektive’ Anschaulichkeit*, M.S.], which have their own remarkable peculiarities of essence, but which will not help us to grasp the universal, *ontological* difference between abstract and concrete contents, or, as we deliberately called them above, independent and non-independent contents. Our former distinction between contents separately singled out and confused background contents pivots on the facts of analysis and fusion; the contents thus separated off might as well be independent and non-independent.” [id.: 17] Thus for Husserl, it is impossible to ascribe both independence and non-independence, i.e. discontinuity and continuity, to moments if moments and, therefore, wholes are taken as **O** in **FO**. In the context of formal ontology, which is free from perception and psychological as well as phenomenological acts, moments are only continuous, just as pieces are only discontinuous. These are invariable, a priori categories that are, as ontological concepts, congruent with the fundamental structure of reality. We would confuse the formal-ontological nature of moments with their empirical nature if we were to take them to be discontinuous as well. This confusion is “done when attempts are made to base the essence of the ontological difference between *concrete* and *abstract* on phenomenological facts which concern the sphere of acts [...]. Our analyses show, however, that anything that holds water in *this* descriptive situation is mixed up with other quite alien matters, and is in any case unfitted to illuminate our ontological distinction.” [id.] For Husserl, the fact that we can discern moments from moments and in the same breath moments from the whole they rely on, thus the fact that continuity and discontinuity are given at the same time, is a contingent and empirical one. It does not lie in the ontological nature of objects to present themselves as one and many at the same time. We have to notice a perceptible whole in a certain way, with a certain intention or mindset and under variable empirical conditions, to be able to oscillate between the parts, i.e. moments, and the whole. Only as contents of perception, is PWO present,⁴⁸ but we are not allowed to transfer the empirical-perceptual

⁴⁷Cf. section 7.4.

⁴⁸In this regard, Husserl did not depart from his psychological stance in the *Philosophy of Arithmetic*: “We can speak of ‘multiplicity as unit’ in a yet wholly different sense, namely in the sense of ‘multiplicity as whole.’ Here the elements of the multiplicity (or the units in the number) are thought as partial representations in the psychical act which has the multiplicity for its intentional object. The interest rests upon the unifiedness [*Geeinigtsein*] of the elements or units in the representation of the multiplicity or number. But the unification comes about, as we have ascertained, only in the psychical act of interest and perception which picks out

occurrence of PWO to the realm of formal ontology and confuse it with the proper distinctions of this realm.

This second focus which the ontological determination of PWO in Husserl's 3rd LI requires is understandable if we refer back to the argument Husserl makes in suggesting what I delineated as the 'flatness' of his part-whole ontology. In this context, he claims that if for the existence of a part **P** we have to allow for the existence of a whole **W**, then we end up in an infinite proliferation of entities, as **P** and **W** need a **W'** and **W'** and **P** need a **W''** etc. in order to exist. Now if we enter, on a purely formal level, the oscillating circle of discerning moments via the whole and the whole via the moments, we would instantly fall prey to this proliferation of entities. As soon as we distinguish one moment from other moments, even if this distinction is not an isolation or separation but just the identification of this or that moment *as* a moment, we not only need to postulate a complex whole in which this identified moment stands out. We also need to postulate a simple whole (if there is one more moment) or complex whole (if there is more than one more moment) that forms the background against which the first moment stands out. If we single out another moment or other moments, we need to postulate different backgrounds, i.e. different wholes with slightly different arrangements of moments.

Furthermore, if we discern the whole in which all moments are parts, and if this whole is itself, as a complex whole, dependent on the moments it includes to be perceived as a whole with moments, then the moments themselves function as whole for the original whole that is then a part. This is because nothing can be founded except by a more embracing whole. The parts would not only have to be embraced by, but at the same time embrace the whole for it to be dependent on them. If the whole were to include its own completion from the outset, then how could it be dependent on something that it is or has in itself? Just as in a fractal, the whole would have to include moments that are, in a change of scope, a whole for it as a whole. This would not only imply an infinite proliferation of entities, but an ontological inconsistency, as moments would be wholes for the same whole in which they are moments, which is a priori unthinkable.⁴⁹ For every entity that switches between moments and the whole, the y-axis is constantly turned upside down and the ontological hierarchy that is typical of parts and whole constantly dissolves and re-emerges.

Thus, on a formal ontological level, the notion of PWO results in infinite regresses as well as in a fatal inconsistency. Having said that, there are no such regresses nor is there such an inconsistency on the level of perception. We can discern the red color of a cup or its shape and no second cup or any other additional entity suddenly pops up. Reality does not proliferate if we perceive an entity sometimes as complex, sometimes as simple or in any other specific way in which one or more moments stand out as moments. Furthermore, there is no inconsistency in the fact that this red cup would not be this red cup without this redness, and this redness would not be this redness without this red cup. Bot moments and moments and

and combines the particular contents, and also can only be perceived in reflexion upon that act. Objectively considered, every multiplicity possesses unity in this sense. It is a whole. But not always is a special interest directed upon it. It is not always thought *as* a whole. It therefore would be misleading to say: 'Every multiplicity is not merely a multiplicity, but rather a multiplicity thought as a unity [*Einheit*]' The two things must, instead, be kept clearly distinct." [Husserl 2003: 164]

⁴⁹Cf. Sokolowski's [2000: 23] correspondent observation that "Moments are the kind of part that cannot become a whole." What is unthinkable in a formal sense, however, does not have to be imperceptible in an empirical sense, as the perceptual occurrence of PWO indicates.

moments and the whole are perceivable as interdependent and fused as well as distinguishable and discontinuous on the level of **MO**. Our perception of PWO is correct and consistent, whereas the formal conceptualization of PWO seems to be problematic. In the end, we may proliferate new meanings and aspects of perceptible contents, but in so doing, there simply are not *more being things* after the act of perception took place.

On the one hand, as **MO** is only a specification and instantiation of **FO** and as nothing in **MO** would be possible and actual if it were impossible in **FO**, we cannot just scratch PWO from our formal ontology, but simultaneously grant it for any material ontology. On the other hand, once we try to make sense of PWO in **FO**, we end up with infinite regresses and inconsistencies. Although it is impossible to conceptualize PWO as an a priori concept, it has to be ontologically possible and thinkable in order to be empirically possible. Like the Husserl of the *Arithmetic* writes, “No concept can be thought without foundation in a concrete intuition.” [Husserl 2003: 83] For this reason, I suggest classifying PWO as *absent* in **FO**, but as *present* in **MO**. Absent does not mean impossible. It only means that we cannot conceptualize PWO; we cannot grasp it logically or formally, as this would disrupt the basic pillars of every formal ontology and every conceptual model, which are internal consistency and the avoidance of infinite regresses. We just have to *accept* and *assume* the ontological possibility of PWO as a condition for the empirical possibility and actuality of moments and wholes that are evidently both indistinguishable (continuous) and distinguishable (discontinuous). We have to *accept* and *assume* PWO as *conceptually not given*, as a logical and even ontological category that is only *present* as perceptible content, but *absent* as a conceptual, a priori object. There would be no reason for accepting and assuming PWO in **FO** if it were not evident in **MO**. But how can we perceive and experience something that is ontologically, i.e. on the level of universal forms and species, strictly impossible? Thus, there has to be a condition for the existence of PWO, as PWO does exist in perception. Whereas, as a hypothesis for now, the existence of PWO is present and given in the empirical realm such that it has a yet-to-be-determined ontological nature, the details of its existence condition are absent and cannot be conceptualized without logical fallacies. Perhaps this would require a formal part-whole *meontology*.

In any case, the absence of PWO in **FO** shows us that formal ontology, at least the Husserlian one that I decided to investigate and whose investigation has proved to be fruitful, cannot carry us any further for now. We arrived at a point where the method of conceptual analysis, the ‘deductive’ method as Hessen calls it, results in a formal model that points beyond itself. The development of this model has provided us with ontological categories and terminology that are indispensable for any philosophical reflection on the dynamic interplay of parts and whole. In so doing, the meta-ontological *quaestio facti* has been answered sufficiently and we have obtained a formal ‘blueprint’ for the further determination of PWO. However, if we are not to leave the model of **FO** behind us at this stage, the present project would have to be canceled, because a purely formal and conceptual determination of PWO disrupts the logical coherence of the model. The only alternative to the cancellation of this project is to classify PWO in **FO** as an unknown, as a process that cannot be further specified for the moment, but that seems to permit a remarkable manner in which perceptual contents are given to us. I think that Husserl is right in opposing **MO** and **FO** throughout the 3rd LI and in analyzing parts and wholes as well as their attributes on both the formal and the empirical level. In so doing, he is able to demonstrate the scope, the limits and the crossings of both realms. When we now turn to the

inductive method of ontology and proceed in a 'bottom-up' direction, it is important to keep in mind that the factual existence and appearance of PWO is in concordance with its ontological possibility. At the same time, as Husserl writes, 'it is mixed up with other quite alien matters' that have no place in an objective, formal ontology, because these matters presuppose a kind of fluctuation and a notion of absence that an *ontology* cannot comprise by the signification of its very name. This fluctuation *is not there* beyond what is empirically perceptible and more generally experienceable, and its conceptual presence, its a priori determinability, would make the ontological model incoherent and endow it with the sort of meaningful vagueness which we find and often benefit from, however, in subjective perception.

2.3 Formal-Ontological Absence Yet Perceptual Presence

Until the beginning of chapter 2, the idea of a dynamic oscillation between parts and whole within one and the same entity was only a vague notion, an initial idea in need of clarification. As a first methodological step towards clarification, I developed in the first chapter two meta-ontological criteria and tied them to two ontological methods. By applying the first method in the second chapter, we were able to unveil the first degree of vagueness the initial notion of PWO entailed. The aim of section 2.2 was to analyze the main concepts that are needed to determine the formal condition for the existence of PWO. Without a clear account of these concepts, the meta-ontological *quaestio facti* (the first criterion) would have to be left unanswered and we would not know what we are looking for if we tried to identify and justify PWO in the empirical realm. This conceptual determination of PWO therefore called for a formal, a priori ontology, which I decided to be Husserl's part-whole ontology that he prepares in his *Philosophy of Arithmetic* and elaborates in his 3rd LI. In following Simons' characterization of Husserl's 3rd LI "as being highly suggestive of possible fruitful developments" [Simons 1982: 114], I provided a reading of Husserl's text as an 'open source code' for purposes that lie outside of Husserl's own phenomenology, although the 3rd LI can be equally regarded as a formal foundation of the later LIs and Husserl's work in general.⁵⁰

The main advantage of Husserl's part-whole ontology for my own project lies in the fact that Husserl's theory proves to be double-tracked instead of single-tracked. This means that instead of contenting himself with the universal level of a formal ontology, Husserl constantly opposes and compares his formal ontology with what he calls 'material ontology'. 'Material' does not mean physical here, but empirical, perceptual, psychological or even phenomenological (Husserl uses these terms interchangeably in the 3rd LI). While formal ontology is about species as universal *objects*, material ontology is about the particular instances of these species as *contents* of perception. Formal ontology consists of ontologically necessary, fundamental, but imperceptible laws, whereas the instances of material ontology are contingent, less precisely determinable, but perceptible. I take it that by developing his part-whole ontology as formal ontology and by constantly applying it to empirical instances, Husserl invites us to transfer the ontological categories he deduces from the concepts of 'part' and 'whole' to the realm of perception and to continue with the inductive method of ontology. After the transition in the next chapter, chapters 4-7 will gladly accept this invitation by turning to ordinary judgments

⁵⁰Cf. Sokolowski [1968, 2000], Willard [1982, 2003] and Ströker [2009].

and empirical experiments concerning parts, wholes and PWO.

It would be counterproductive now to just repeat and summarize subsections 2.2.1–2.2.7 one by one, as the distinctions between parts and wholes as well as their attributes both in formal and material ontology turned out to be not only interrelated, but to be misleading as well. Instead, it is more productive to go through section 2.2 and adapt or correct the concepts we obtained in the light of this chapter as a whole and with the interpretative freedom Husserl's theory suggests. Further, I would like to get rid of the abbreviations I gradually introduced, because I think that they are stylistically and therefore heuristically disturbing for further discussions outside of the Husserlian framework. To conclude my discussion and interpretation of Husserl's 3rd LI, I rather prefer to introduce and characterize a range of technical terms in plain language with which I think Husserl's part-whole ontology can be productively continued.

To do so, let us begin with subsection 2.2.2. There we saw that in both formal and material ontology there can be simple and complex wholes and that simple wholes are atoms, while complex wholes are wholes that are divisible into parts. However, with subsection 2.2.7 in mind, it is important to distinguish between formal and material here. In formal ontology, a simple whole is indivisible into parts and therefore is an atom, which makes the term 'simple whole' contradictory (wholes are only wholes because they are correlated with their parts). We should rather speak of 'atoms' in this case. A 'complex whole' in a formal sense is – to avoid a tautology – just a whole, and – in order to avoid confusing it with a perceptual whole – I would like to neutrally call a formal whole a 'set'. In material ontology, a simple whole is not an atom, but rather a complex whole that appears as simple. A red cup is not an atom, because it has pieces and moments as parts, but it appears as one cup. We can perceive a content as a seemingly atomic unity or as a seemingly complex multiplicity of parts. There are no strict, absolute atoms or complexes (sets) in perception. Moreover, let us from now on use the term 'ontology' not only for formal ontology and the a priori domain, but also for material ontology and its empirical domain. As we saw in chapter 1, an ontological theory would be methodologically and therefore factually incomplete without reflections on the experienceability of the postulated or 'modeled' ontological concepts. Let me then outline the corrected table as follows:

		Formal Ontology (A Priori Reasoning)	Material Ontology (Empirical Perception)
Entity		Object	Content
Part		Objective Part	Perceptible Part
Whole	Simple	Atom	Unity
	Complex	Set	Diversity

It would also be misleading to connect the term 'whole' with the notion of independent parts and wholes, i.e. with pieces and agglomerations of pieces, as I did in subsection 2.2.3. We saw that a whole, as an additional entity, can only be thought of in the case of moments, because only moments need completion, whereas pieces neither create nor rely on such an additional entity. An agglomeration of pieces is therefore not a whole, as a whole is needed as the condition for existence for its parts (moments), while an agglomeration is not the existence condition for its parts (pieces). In a certain sense, an agglomeration of pieces is a piece itself. The material

parts of a chair are pieces, the agglomeration of these parts in a certain arrangement results in the chair, but the chair is also a piece in relation to, for example, a collection of furniture. It is as separable from this collection as its own pieces are separable from itself as a chair, which leaves open the question whether the entity 'chair' actually exists alongside and in addition to its pieces or not. Consequently, if pieces are the material parts of an entity, then moments must be the immaterial parts of it. Let us say that an entity's pieces are described by 'primary qualities' (its qualities related to its extension in space and time, such as its weight, size and duration) and moments by 'secondary qualities' (its qualities related to its being perceptible, such as its color, sound, smell, taste) as well as 'tertiary qualities' (e.g. feelings, moods, atmospheres, values, qualia). Perceptible moments, however, only cover secondary qualities, because the experience of tertiary qualities transcends purely sensory information.

		Formal Ontology (A Priori Reasoning)	Material Ontology (Empirical Perception)
Entity		Object	Content
Part	Prim. Quality	Objective Piece	Perceptible Piece
	Sec. Quality	Objective Moment	Perceptible Moment
Whole	of Pieces	Objective Agglomeration	Perceptible Agglomeration
	of Moments	Objective Whole	Perceptible Whole
	Simple	Atom	Unity
	Complex	Set	Diversity

In subsection 2.2.4, I talked about the Husserlian notions of relative (in)dependency and absolute (in)dependency. This means that most entities, whether ontological or perceptible, are dependent relative to some entities, while they are independent relative to other entities. Only very few entities are absolutely dependent or independent. In general, we can say that every entity in the column 'Material Ontology', i.e. every content, is dependent on every entity in the column 'Formal Ontology', i.e. on every object, but not vice versa. Contents of perception are just the instantiation of their ontological species, they are the concrete actualization of their general possibility. Without the species, the content could not exist. We can say that the formal column *supervenes* on the material column, which, in return, empirically validates what is stated as a concept in the formal column. Then we saw that pieces do not depend on their agglomerations, whereas moments do depend on their wholes. This is valid both in a priori reasoning and in empirical perception.

The question concerning relative and absolute (in)dependence is more difficult in the case of agglomerations and wholes. Everything that can be said in this case is (1) a tentative interpretation of the 3rd LI, because Husserl does not give a clear account there of whether or not and how (which) wholes are dependent on (which) parts, and (2) highly debatable. To me it seems plausible at this juncture and in the light of what has been discussed so far, that together with the unidirectional dependency relation of objects and contents, wholes are dependent on moments, while agglomerations are not dependent on pieces. Wholes are dependent on moments, because they correlate with moments. A whole without moments is either an atom and therefore not a whole, or it is a unity and therefore a *potentially complex* whole that only appears as simple in a certain perceptual perspective. This leaves the question

open whether a whole can remain identical with itself, i.e. persist, when its moments change. I will discuss this question in chapters 6 and 7 in the context of perception and transposition. An aggregation is independent relative to its pieces, because we saw that an aggregation of pieces is a piece in its own right and pieces are by definition independent. This leaves the question open whether aggregations are ontological entities that exist in addition to their pieces. However, this question does not concern me in this project, because the possibility of PWO rather points to the direction of moments and wholes.

The argumentation of subsections 2.2.5 and 2.2.6 embedded Husserl's part-whole ontology in a Cartesian coordinate system with a horizontal (flat) and a vertical (hierarchical) dimension. Pieces and aggregations belong to the horizontal axis, whereas moments and wholes belong to the vertical axis. We also saw that most entities, whether ontological or perceptible, can be located in the positive area of both axes and therefore consist of primary as well as secondary qualities. Subsection 2.2.7, however, demonstrated that the y-axis differs in the cases of formal and material ontology. In formal ontology, there are necessary, a priori laws that allocate a fixed place with immediate neighbors to every moment of an object on the y-axis in order to avoid infinite regresses and logical inconsistencies. In perception, however, we can perceive one moment m sometimes as a moment of a whole w , and the same moment m as a whole w' for the whole w that then turns into a moment m' of w' . This happens when we single out a moment in perception, which is ontologically inexplicable, because moments are a priori fused with other moments and with their whole, which makes them indistinguishable. Ontologically, moments and wholes are exclusively continuous and pieces and agglomerations are exclusively discontinuous. In perception, however, moments and wholes appear as *both* continuous *and* discontinuous. On second thoughts we could equally state that perceptible pieces and perceptible aggregations appear as *both* discontinuous *and* continuous.⁵¹

The dynamic process I am seeking to determine in this project, PWO, displays exactly this interplay of moments and whole. One and the same entity sometimes emphasizes its whole-character while at other times the individual moments that compose the whole can be glimpsed. Husserl assures us that this dynamic process is only subjective and therefore 'vague'. It has no place in a formal ontology whose laws are eternally fixed and it should not be confused with the valid difference between discernible or separable pieces and indiscernible or fused moments. But as a complete (i.e. formal *and* material) ontology would be incomplete (and therefore not universal) if it could not account for some perceptible instances like PWO, we have to assume that PWO is formal-ontologically possible without being formal-ontologically determinable. Therefore, I suggest classifying it as formal-ontologically, and in this sense logically, *absent*, while it is material-ontologically, i.e. perceptually, *present*. To be more precise, PWO happens on the vertical axis of a complete part-whole ontology, because despite the constant rotation of this axis it involves, it still relies on the interdependency and therefore on an intermittent hierarchy

⁵¹Aggregations can appear to us as continuous when we cannot single out the ontologically separated pieces in perception. If, ontologically, a cup has two immediate pieces (say its bowl and its handle), we often cannot tell in perception where the handle ends and the bowl begins. The pieces appear to us as fused, as continuous for empirical reasons. Therefore, we can say that like the discontinuation of perceptible moments, the continuation of perceptible pieces is ontologically not given, although somehow the fusion of pieces in perception must be ontologically *possible*, otherwise we could not have such perceptions or our perception and its content would be *impossible*, which is disproved by the undeniability of the very perception we *actually* have in this case.

of parts and wholes. This interdependency is not given in the case of pieces and agglomerations and therefore not in formal ontology, only in a material ontology of perception. By keeping this difference in mind, we can provide a first positive determination of PWO's ontological nature as it is yielded by the deductive method of a priori reasoning:

PWO_{ded} A part-whole oscillation (PWO) is the dynamic interplay of moments and whole within the same entity. It occurs when, during the fusion (continuation) of moments and whole, both moments and whole become distinguishable (discontinuous) as well. During their continuation, moments and whole stand out alternately and the entity in question displays both the qualities of the moments and the potentially different or even contradictory qualities of the whole.

The next step for the present project is to turn to empirical cases where PWO is present in order to make any positive statements about it – if this is at all possible, of course, because until now, not only the concepts in the ontology column, but also the ones in the perception column have been just that: concepts. Simply by making the claim that the contents of some concepts are perceptible while the objects of others are not and by taking examples like a cup, a chair or a melody, it would be overly hasty to expect that we already went beyond the conceptual model. Reflecting about reality and postulating ontological concepts about its formal and material categories is not the same as directly looking at reality to justify the conceptually postulated categories and back them up via inductive reasoning. We saw that PWO is ontologically possible, but not further determinable in a formal sense. The next step is to proceed where PWO until now has only been *assumed* to be present and perceptible: to the *concrete* and *actual*, not only ontological and a priori *possible* field of perceptible moments and perceptible wholes. This indeed implies some kind of fieldwork for the philosopher, or rather – in the case of the present project – looking over the shoulders of philosophizing linguists (chapters 4 and 5) and philosophizing psychologists (chapter 6 and 7) who carried out the empirical fieldwork. What we can do is evaluate the data they obtained in their studies and accentuate their ontological significance.

Before that, however, let us complete the model with the concepts developed thus far and delineate them in the final table of this chapter, which also includes the results of the first chapter. The horizontal axis I symbolize with the arrow \leftrightarrow , which points in both directions, as the horizontal order does not existentially matter for pieces.⁵² The vertical axis is symbolized by \uparrow (dependent on a more inclusive whole), \downarrow (dependent on moments) and \circlearrowright (vertically oscillating). The table below summarizes the status quo of the present project as it attempts to determine the ontological nature of PWO. For now we can conclude that PWO *is formal-ontologically absent yet possible, because it is (assumed to be) empirically present*. Thus the reason for the ontological possibility of PWO is its assumed presence in perception. With ontological categories alone, at least with the ones I found in Husserl's 3rd LI, we would not arrive at a consistent notion of PWO. The ontological presence of PWO, and, with it, the positive characteristics of its ontological nature, however, has not been proven yet. This means that even the ontological possibility of PWO is built on sand as long as the ontological nature of PWO is not determined. We saw that the ontological nature of PWO is not determinable via a priori reasoning, but only by studying empirical perception. This is why we have to

⁵²Cf. subsection 2.2.5 above.

turn to perception and see what we can achieve with the inductive method. In doing so, the most important point to keep in mind is that PWO consists of an interplay between perceptible parts and perceptible wholes, which are *interdependent*. Part-whole interdependency is thus a condition for the dynamic process we seek. Consequently, we have to consider empirical theories on parts and the whole, be it in ordinary language or direct perception, which deal with and ideally confirm this interdependency. This would be a promising continuation of the line of argumentation towards PWO's ontological nature. In the next chapter, however, we will see that such a continuation is not taken for granted if we consider approaches that either operate on the level of pieces and agglomerations (section 3.1) or on the level of an applied formal ontology (3.2).

		Formal Ontology (A Priori Reasoning)	Material Ontology (Empirical Perception)
Method		Deductive (<i>quaestio facti</i>)	Inductive (<i>quaestio iuris</i>)
Entity		Object	Content
Part	Primary Quality (\leftrightarrow)	Objective Piece	Perceptible Piece
	Secondary Quality (\uparrow)	Objective Moment	Perceptible Moment
Whole	of Pieces (\leftrightarrow)	Objective Agglomeration	Perceptible Agglomeration
	of Moments (\downarrow)	Objective Whole	Perceptible Whole
	Simple	Atom	Unity
	Complex	Set	Diversity
PWO	Moment-Whole (\odot)	absent	present

3 Two Alternative Lines of Argumentation

3.1 Material Composition and Mereology

Reflections on the correlation and the ontological nature of parts and wholes have been a recurrent and broadly applied topic of western philosophy. It would go beyond the scope of the present project to even summarize the different historical positions and arguments in this regard.¹ However, in the past decades and with the establishment of mereology as a logical as well as ontological subdiscipline², there has been a sort of renaissance of part-whole thinking in philosophical ontology. A considerable literature, particularly of an analytic fashion, has grown up around this theme. In this context, it is striking that although mereology is principally unrestricted,³ most formal-ontological theories on parts and wholes are deliberately restricted to material entities with detachable parts (pieces) and analyze the logical and spatiotemporal problems, puzzles and paradoxes such entities entail. This is striking, because, according to K. Fine [1995: 463], “Husserl’s third *Logical Investigation* is perhaps the most significant treatise on the concept of part to be found in the philosophical literature.” It is exactly in this fundamental text for contemporary part-whole theory that Husserl, as we saw above, develops a framework in which most entities have a place within a fourfold pattern: (1) as an ontological piece/aggregation, (2) as an ontological moment/whole, (3) as a perceptible piece/aggregation, and (4) as a perceptible moment/whole.

In most of the current research on ontological part-whole structures, however, only (1) and (3) seem to be taken into account, whereby often an instance of (3) is discussed, without any further reflections on its appearance as a content of perception, and from there a statement regarding (1) is concluded. In so doing, (2) and (4), in which the equally important undetachable and founded parts of an entity could be reflected on, remain unconsidered. Consequently, parts are only treated as objects in their own right, which moments are ontologically precisely not: Although they can be *distinguished* in perception, they are ontologically *fused*. In other words, many current ontological studies that concentrate on parts and wholes seem only to consider the primary qualities of an entity as a proper part of this entity, while they disregard an entity’s secondary (let alone tertiary) qualities or treat them misleadingly as discontinuous pieces instead of continuous moments. This critique corresponds with the one that Smith et al. [1982: 54–5] make: “The ontological structure, both formal and material, uncovered by

¹On parts and wholes in Plato cf. Harte [2002]; in Sextus Empiricus cf. Barnes [2011]; in Aristotle cf. Muižniece [2012]; in Aristotle, scholastic and modern philosophy cf. Pasnau [2011] and Brown & Normore [2014]; and in early modern philosophy cf. Holden [2004].

²Cf. for historical and technical introductions Simons [2000], Ridder [2002], Hovda [2009], Cotnoir [2014] and Varzi [2016].

³Cf. van Inwagen [1994: 207].

Husserl has been obscured to philosophers working within the analytic tradition primarily in virtue of the unargued identification of the *formal* with the formal *logical*. Once the distinction between formal logic (i.e. formal theory of meaning-connections) and formal ontology (formal object-theory) is clearly drawn, then it becomes possible to recognise also material connections both amongst meanings and amongst objects.”

Many examples of contemporary contributions on parts and wholes can be given in which this general tendency comes to the fore. R. Chisholm begins his 1973 article ‘Parts as Essential to Their Wholes’ by presenting “the principle of mereological essentialism. The principle may be formulated by saying that, for any whole *x*, if *x* has *y* as one of its parts then *y* is part of *x* in every possible world in which *x* exists. The principle may also be put by saying that every whole has the parts that it has necessarily, or by saying that if *y* is part of *x* then the property of having *y* as one of its parts is essential to *x*. If the principle is true, then if *y* is ever part of *x*, *y* will be part of *x* as long as *x* exists.” [Chisholm 1973: 581–2] To illustrate this principle, Chisholm refers to a passage in G.E. Moore in which the latter writes about the necessity for a particular whole to have its particular parts in order to be this particular whole. Moore demonstrates this by referring to visual sense data, i.e. to “a colored patch half of which is red and half yellow” [Moore 1922: 287–8], and concludes that this “particular whole could not have existed without having that particular patch [the red or yellow one, M.S.] for a part.” [id.: 288]. Furthermore, Moore states that although the particular whole depends on its particular colors as parts (a principle that is also true for perceptible parts and wholes in the Husserlian framework), the particular colors do not depend on the particular whole (in contrast to what we learned from Husserl considering moments as dependent on their whole). According to Moore, it “seems quite clear that, though the whole could not have existed without having the red patch for a part, the red patch might perfectly well have existed without being part of that particular whole.” [id.]

Moore thus takes the color to be a detachable piece instead of an undetachable moment. This would make the ‘colored patch’ a material aggregate instead of an immaterial whole, because I cannot think of any way a color could be detached from a whole if this whole were not a material entity, like a patch in the sense of a two-colored ‘sewn-on badge’ or ‘eye-patch’. Such material entities you can cut in two halves with a pair of scissors. If you cut them along the connecting line of the two colors, you can ‘detach’ the colors, although it is actually not the colors that are detached, but the material texture of the patch. The two colors are not detached if their material basis is not detached as well, but this would not be true the other way round, as the material basis can also be detached *not* along the connecting line of the colors. In this example, the particular colors would indeed not exist without being arranged in this particular whole that, in turn, is dependent on the material texture of the patch. Chisholm, however, also understands the colors as pieces, but, at the same time, he seems to feel the complexity that is involved when ontological claims are made concerning the (in)dependency of secondary qualities like colors, particularly in connection with their material counterparts. This becomes evident right after he quotes Moore, because from then on, he decides to exclusively focus on primary qualities. “Instead of considering such things as sense-data and visual patches, let us consider physical things. Let us picture to ourselves a very simple table, improvised from a stump and a board.” [Chisholm 1973: 582–3]

The remainder of Chisholm’s article consists in puzzles concerning the detachment of the

stump and the board as parts (pieces) from the table as a whole (aggregate). Reflections on the role of perception, which would be significant for analyzing the parts of the table as perceptible moments, however, are explicitly factored out.⁴ Although such a reduction of complexity is admittedly beneficial for tackling problems considering the constitution, identity and persistence of material entities, it does not help us any further in the ontological determination of PWO, because the next step towards this determination asks for a closer inspection of secondary qualities as undetachable yet distinguishable moments of perceptible wholes.

A more nuanced position concerning the immaterial parts of an entity is held by L. A. Paul in her 2002 article ‘Logical Parts’. Paul starts by describing “a large, comfortable red chair” [Paul 2002: 578] in her office. We “can think of the chair as having many different spatial components, but we can also think of the chair as having many different *qualitative components*. The chair has armrests, a headrest, a back and a seat, but it also has the properties of being red, of being large, and being comfortable. The chair is the sum of its spatial components, but it might very well be that the chair is also the sum of its qualitative components.” [id.] What Paul calls the ‘spatial components’, we can identify as the primary qualities or material parts of an entity. More interestingly, Paul also mentions ‘qualitative components’ like the redness, the largeness and the comfortability of the chair. While I would distinguish ‘redness’ and ‘largeness’, as secondary, perceptible qualities, from ‘comfortability’ as a tertiary quality (let us say the *how* it is to perceive something), Paul summarizes such diverse qualitative components as ‘logical parts’. Although the reason for this renaming is not quite clear to me,⁵ she argues that spatial parts and logical parts are two different kinds of parts of the same whole. They have to be kept apart and do not stand in a transitive relation to another.⁶ However, what logical parts seem to share with spatial parts (or ‘spatiotemporal’ parts, as Paul also calls them) is what we can call with Husserl the ‘independence’ or ‘discontinuation’ of a part. In the same manner in which we can detach a material part of a red cup, say its handle, and this part continues to exist as an entity in its own right, Paul thinks that we can also detach the logical part such as the particular redness from the cup. Unlike a Husserlian moment, the particular redness then

⁴“We are saying, in application to our example of the table, that there exists an *x*, a *y*, and a *z* such that: *x* is identical with this table, *y* is identical with this stump, *z* is identical with this board, and *x* is such that, in every possible world in which *x* exists, it is made up of *y* and *z*. Our statement says nothing whatever about the way in which human beings may happen to conceive or to look upon such things as this table. And, a fortiori, it says nothing whatever about the way in which we may happen to describe this table or use the language we do. Its subject-matter is no more nor less than this table, the parts of this table, and the possible worlds in which this table exists.” [Chisholm 1973: 583]

⁵“If objects have properties as parts, then a simple way to define objects is as (certain) fusions of properties. Defining objects in this way amounts to subsuming the bundle theory under the aegis of mereology. Start with sums or fusions of properties, where the properties that compose the fusion are parts of the whole. Since the properties in the fusion need not be qualitative (e.g., they could be the having of locations), call the properties that are parts of the whole ‘logical parts’ rather than ‘qualitative parts’. So a logical part of a fusion is a property which is included in the fusion.” [Paul 2002: 579] So logical parts seem to include both qualitative parts and non-qualitative parts, whereby non-qualitative parts have locations, but are not spatial parts, because these are opposed to logical parts as qualitative parts? If this recapitulation of Paul’s argument is correct, then I do not understand it. What is the difference between a spatial part and a logical part with ‘the having of locations’? And aren’t spatial parts also ‘included in the fusion’ of the whole?

⁶“We also have to be clear about what *kinds* of parts we are making claims about: when, for example, I say that a spatial part of my chair, the cushion, includes the logical part of being cushion-shaped, it does not imply that my chair includes the logical part of being cushion-shaped, for we are talking about different kinds of parts. (Transitivity implies that a logical part of a logical part of *O* is itself a logical part of *O*. It does not imply that a logical part of a spatial part of *O* is a logical part of *O*.) [id.: 581]

continues to exist as an entity in its own right. “And just as the objects we can identify by mentally subtracting away various spatial parts of the cup as a whole *really exist* as objects in their own right even if the spatial parts aren’t actually subtracted away, objects that we can conceive of by mentally subtracting away various logical parts of the cup – even if we can’t easily imagine them – *really exist* as objects in their own right, even if the logical parts aren’t actually subtracted away.” [id.: 582]

So, although spatial and logical parts are taken as different kinds of parts (which I also think they are), they would both fall under the category of ‘pieces’ in the Husserlian sense (which I do not think they do). Although logical parts refer to different qualities than spatial parts, Paul basically states (without giving any argument for it) that logical parts can be mereologically treated *as* spatial parts. While I think that what Paul calls ‘logical parts’ would require at least a consideration of how these parts are empirically perceived or phenomenologically experienced in order to attribute them to an entity, she directly attributes them to an entity without such a consideration. Of course, it is advantageous for Paul to postulate the independence and discontinuity of logical parts, because in so doing she can explain, for instance, how two red cups that look identical can be spatially distinct while sharing the same redness.⁷ However, can the particular redness or the particular comfortability of a particular chair *de facto* be detached from the context, i.e. from the whole in which these qualities appear, and then continue to exist as ontologically independent objects in their own right? That we can indeed subjectively distinguish and single out such moments of a whole is one thing, but that we should also assume that this perceptual act of distinguishing is accompanied by a fragmentation or discontinuation of the logical parts’ continuity on the ontological level is quite another thing. Although Paul sporadically tends to reduce the detachment of logical parts to subjective acts of singling or ‘picking’ out,⁸ which would not necessarily entail the thus detached logical parts ontologically existing as objects in their own right, she accepts this entailment and admits that logical parts, even counted as overlapping with other logical parts, add up to the ontological inventory that is also filled with spatiotemporal parts.⁹ Thus, by transferring the ontological divisibility and discontinuation typical for material parts to immaterial parts, which I think is a questionable

⁷“The objects that we have called the red cups with all their properties have all their logical parts, including their spatial locations, and so the objects that are the cups are spatially distinct. But when we subtract away the proper logical parts which are the particular spatial properties (and perhaps other relevant parts, such as the part of being a cup) we are left with the part of redness; in other words, we are left with just one object. This lone object grounds the claim that the redness of each cup is the same. Here, there is just one object *that has no location properties as parts*. This object – call it *R* – partly overlaps objects that include location properties as parts, but *R* does not include the location properties themselves.” [id.: 584]

⁸“Moreover, *R* is not transcendent, at least not in the usual sense of the term. The point here is that we can pick out and hence distinguish *R* from objects that include locations as parts because *R* overlaps these located objects, not that *R* exists in some mysterious realm distinct from particulars.” [id.: 584]

⁹“The obvious issue I need to address is the size of my ontology. Doesn’t my theory of logical objects imply that when we count the number of objects in the world, we will find far more objects than we ever dreamt we had? The easy answer to this question is yes - we have more objects than we common-sensically thought we had. [...] Related to this point, it is important to recognize that context determines how we count. In a theoretical context like the one established by this paper, we stand back and count many different overlapping objects; many objects that are not logically distinct from one another. [...] Recognizing the phenomenon of overlap amounts to the recognition that although we usually count by distinctness, we can also count by difference. Recognizing the existence of logical parts along with spatial (and in some cases, temporal) parts means recognizing that we can count by spatial, temporal and qualitative difference as well as distinctness.” [id.: 592–3]

move that should at least be justified, Paul on the one hand overcomes the exclusiveness of parts seen as spatiotemporal entities (pieces). On the other hand, she still – at least in this particular article – reduces immaterial moments to the mereological and ‘horizontal’¹⁰ level of material pieces and aggregates.

In the light of my own project, Chisholm’s and in particular Paul’s article deserved a special mention, because they are at least concerned with the secondary and, in a rudimentary sense, tertiary qualities of an entity as this entity’s parts. Many other texts in what may be called ‘analytic part-whole theory’, however, seem to restrict themselves, i.e. the domain over which their mereological reflections range, to material aggregations and pieces from the outset, without taking immaterial parts and their perceptibility or experienceability into consideration. Examples would be van Inwagen’s [1990] influential *Material Beings*; N. Markosian’s ‘Brutal Composition’, in which he concentrates on “composite objects in the physical universe” [Markosian 1998: 211]; K. McDaniel’s ‘Parts and Wholes’;¹¹ P. Hovda’s ‘Natural Mereology and Classical Mereology’;¹² or K. Koslicki’s *The Structure of Objects*, in which, while arguing in favor of the structural arrangement of parts in order to avoid the creation of a whole out of every arbitrary combination of parts, she contents herself with an “analysis of ordinary material objects” [2008: ix]. Even when the problem of the detachability of parts from the whole is discussed (for example: Is the upper third of the Eiffel Tower an object in its own right?), these parts are usually understood as physical parts that could – once detached – exist on their own.¹³

In these approaches, parts are usually not understood as, for instance, an entity’s values, aesthetic qualities, or cultural meanings, as when we ask: Could Mona Lisa’s smile be detached from the painting and exist in its own right? Or: How can I be an undetached part in the online video game I’m playing and at the same time be materially detached from this game, because my real body is not in the world in which my momentary actions take place (the experience of ‘telepresence’)? Or: How can a *Glühwein* as an essential part of a German Christmas market be detached from this whole and exist as an equally flavorful beverage on a hot summer day? To me it seems that such questions would require other, more embracing, contextual and experiential, less materialistic and formalistic approaches to part-whole thinking. Without any doubt, the reduction of parts to discontinuous pieces is beneficial in its own right and should certainly not be criticized or even downgraded from an external point of view. Among other things, such a reduction paves the way to significant philosophical questions such as the ones about (1) the possible identity of material aggregates when their parts undergo change, (2) the possible identity of parts with the whole they compose, and (3) the possible formalization of part-whole structures in a technical language such as the one of classical extensional mereology. Let me just finish this section by outlining these questions, before I dedicate the remainder of my project to the other branch that Husserl’s part-whole ontology invites us to follow: the

¹⁰Cf. subsection 2.2.5.

¹¹“In what follows, we will set aside concerns about whether parthood is topic-neutral and whether compositional pluralism or monism is true. We will focus on questions about the parthood relation as it applies to material objects, and we will assume that there is only one such relation.” [McDaniel 2010: 416]

¹²“We begin with some *natural objects* (to be thought of as concrete *natural units* on the model of the naturalistic mereology) and a given part-whole relation on them; call the set of these objects the *natural domain* and the relation the *natural part-whole relation*.” [Hovda: 2014: 146]

¹³Cf. van Inwagen [1997] and Varzi [2013].

perceptual side of interdependent moments and wholes.

3.1.1 Part-Whole Identity When Parts Undergo Change

The question concerning the possible identity of material aggregates when their parts undergo change is often expressed in puzzles, the most famous of which is probably the Ship of Theseus Puzzle. This puzzle has been discussed since the beginning of Western philosophy, but has certainly found a revival in recent studies in the context of mereology. In his article ‘The Problem of Material Constitution’, M. Rea describes the Theseus puzzle as follows: “Consider the Ship of Theseus: a wooden ship that, over the course of time, gradually undergoes the replacement of each of its constituent planks. Clearly, it seems, the ship survives each individual replacement; hence, there is good reason to think that the ship that exists once the series of replacements is complete is the ship we originally started out with. But now suppose someone takes the discarded planks and puts them back together in their original form as a ship [which is T. Hobbes’ contribution to the problem, M.S.]: it seems that there is also good reason to think that this ship is the ship we started out with. But, of course, both ships cannot be the Ship of Theseus; so the question is, Which of the final two ships is identical with the original?” [Rea 1995: 532] To better analyze this problem, Rea first identifies five general assumptions whose joint concurrence would cause this and related puzzles¹⁴ of material constitution, because they are all plausible yet incompatible: the Existence Assumption (“there is an *F* and there are *ps* that compose it” [id.: 527]¹⁵), the Essentialist Assumption (“if the *ps* compose an *F*, then they compose an object that is essentially such that it bears a certain relation *R* to its parts” [id.]), the Principle of Alternative Compositional Possibilities (“if the *ps* compose an *F*, then they compose an object that can exist and *not* bear *R* to its parts” [id.]), the Identity Assumption (“if the *ps* compose both *a* and *b*, then *a* is identical with *b*” [id.]), and the Necessity Assumption (“if *a* is identical with *b* then *a* is necessarily identical with *b*.” [id.]). In a second step, Rea demonstrates how these assumptions create the paradoxical character of the Theseus puzzle and how the rejection of any one of them would solve this puzzle. Thirdly, instead of arguing for his personal preference, Rea provides us with a helpful overview or ‘taxonomy’ of different positions and the corresponding (almost exclusively contemporary and analytical) philosophers that reject any one of these five assumptions.

However, it should be clear by now that regardless of the different kinds of solutions and adaptations of this¹⁶ and similar puzzles, such puzzles are only consequential when we regard the material, independent, detachable parts of aggregations, i.e. when we ask: “How much change of any kind is consistent with a physical object’s continued existence?” [Carroll et al. 2010: 215] Ontologically seen, this question does not address every possible domain in which

¹⁴In the article just quoted, Rea also discusses the ‘Growing Argument’, the ‘Body-minus Argument’ and “Allan Gibbard’s puzzle about Lump1 and Goliath (a piece of clay and statue, respectively).” [Rea 1995: 525] These puzzles are based on the same assumptions as the Theseus puzzle.

¹⁵Rea defines ‘*ps*’ as non-overlapping material parts of a whole *x* they compose, whereby “every part of *x* overlaps at least one of the *ps*’.” [id.: 526] In the case of the Theseus puzzle, ‘*p*’ would stand for one plank of wood.

¹⁶Cf. for example Scaltas [1980], who, in order to show that “there is no sharply defined hierarchy of sufficiency conditions” for this problem, lets two identically constructed but differently painted ships run offshore and exchange their planks before they arrive in the harbor of Delos. For very detailed discussions of the Theseus puzzle cf. Gallois [1998] and Wiggins [2001].

we can talk about parts and wholes. Such a restriction to material entities only gives cause for concern if one derives from or identifies with material entities alone a mereological theory that is supposed to be ‘topic-neutral’, i.e. unrestricted as a formal ontology. If such a one-sidedly derived or identified mereology is to be valid for *all* kinds of parts, thus implicitly also for moments, it tacitly disallows other domains in which part-whole structures can be located as well.¹⁷ This unjustified generalization could be called a ‘mereological fallacy’. In this regard, I find it even more remarkable when a philosopher like Lowe, after presenting his own and other philosophers’ solutions to the Theseus puzzle, concludes his argumentation by denying that another category of objects, namely works of art, can be deconstructed and reconstructed like ships without losing their identity.¹⁸ An even mildly differentiating attitude like his and Paul’s definitely indicates the need for an ontologically more complete and diverse discussion of part-whole structures.

3.1.2 Part-Whole Identity as Composition

It is not only the detachment, exchange and reassembling of material parts that involves problems for the identity of the parts’ aggregate. The mere concurrence of undetached pieces and the aggregate or fusion they compose also leads to the fundamental question of whether or not the aggregate exists as an entity additional to its pieces. Is a chair an entity that is not identical with, i.e. that exists additionally to the sum of its pieces, say its seat, its back and its legs? If this were to be the case, then we would not only have to make a plenitude of additional ‘entries’ in our ontological inventory, but we would also have to explain how different material things, e.g. the sum of {seat, back, legs} *and* the chair itself as a whole, can occupy the same spatiotemporal position. Furthermore and with Leibniz’ principle of the identity of indiscernibles, we may want to know how the chair and the sum of its parts can be discerned if both have the same properties and the same spatiotemporal position. Above all this, it would be necessary to justify the avoidance of double-counting when it comes to single parts and their

¹⁷Cf. in this regard Schwarz et al.’s [2008: 203-4] objection that even within the domain of material objects, one has to distinguish between living and lifeless objects. “For instance, there are no criteria of identity that apply to material things in general. Living beings remain the same entity as long as they stay alive, and they need to exchange matter in order to do so. By contrast, lifeless objects may be identified, simply, in terms of their matter. Further, although (most?) artifacts are lifeless objects, an identification of artifacts in terms of their matter leads to certain problems: a ship arguably does not cease to be the same ship when all its planks are replaced. Hence, living beings, artifacts, and other physical objects should be distinguished, not in terms of specific differences regarding their features and qualities, but in terms of the principles according to which they may reasonably be identified as the same things over a certain period of time [...]”

¹⁸“The answer seems to be that in the case of a work of art the original artist’s *work* is essential to its identity. Thus Leonardo’s *Last Supper* has to be *his* work, the result of *his* efforts: if it is substantially ‘restored’ then what remains *isn’t* the result of *his* efforts, but is of those of the restorers. With ordinary artifacts this feature is not particularly crucial, since we are likely to be more concerned with the object’s utility (works of art are peculiar precisely in that they are *not* created primarily for any utility value). We value a work of art not least for being the *product of a certain artist*: and this is also why *replicas* are no substitute for the original thing and don’t count as the ‘same work,’ i.e., why works of art – at least in the case of paintings and sculpture – are *particulars* rather than *universals*, tokens rather than types.” [Lowe 1983: 231] Beyond doubt, Lowe’s artist-focused and very brief explanation of why artworks are not dispersible into parts without being destroyed may be disputable. But it is certainly to his credit that he is able to delineate a bigger picture, showing that physical parts and aggregations are not the only way we can think and problematize reality as consisting of parts and wholes.

whole.¹⁹ For reasons like these, arguments have often been put forward²⁰ for some weaker or stronger version of what D. Lewis calls and defends as ‘Composition as Identity’. Although, for Lewis, every possible combination of parts, for example the seat of a chair and B. Obama’s left ear, can be mereologically fused, i.e. regarded as a whole, such wholes are not ontologically additional entities. It is sufficient to commit ourselves to the existence of the parts and give a full description of them,²¹ whereas the whole they possibly compose is included in this full description and is just what D. Armstrong calls a “supervenient”, which is an “ontological free lunch” [Armstrong 1997: 13]. Part-whole identity is supposed to guarantee the ‘ontological innocence’ of mereology.

However, we should again stress the point that this current debate on the identity or difference between material parts and their whole presupposes the detachability of the parts and therefore does not count for all kinds of parts. It would be fallacious to identify the kind of mereology that follows from Composition as Identity as a formal ontology with an unrestricted scope. In fact, as A. Varzi, who himself endorses a weak version of Composition as Identity, makes us aware, the ontological innocence of mereology presupposes the assumption that there are no wholes that are irreducible to their parts. “Indeed, Composition as Identity is a metaphysical thesis: if true, it must be necessarily true. The very *possibility* that there be irreducible wholes would therefore suffice to establish the falsity of the thesis [...]” [Varzi 2014: 63] If it indeed

¹⁹Cf. on this Baxter’s [1988: 200] juice example: “If something exists then it is one thing. So apparently if a whole with two parts exists, then three things exist: the whole and each of the parts. But this is a very counter-intuitive way to count. Consider the express check-out line in a grocery store. It says ‘six items or less’. You have a six-pack of orange juice. You might well wonder if you have one item or six items. But you would never hesitate to go into the line for fear of having seven items: six cans of orange juice plus one six-pack. [...] In counting we either count the whole as one, or each part as one. If we count the whole then we do not count the parts. If we count the parts then we do not count the whole.”

²⁰This is how Brown et al. [2014: 43] conclude their article ‘On Bits and Pieces in the History of Philosophy’: “Medieval and early modern philosophers wrestle with the relation between an ordinary physical or material thing and its parts taken collectively in ways that are still very familiar. The tension between pictures in which such things are composed by assembling parts that are at least ontologically prior and pictures in which they are themselves ontologically basic and their parts are derivative upon them remains with us. One thing that history makes clear is that the dominant tradition throughout has been one which maintained that the parts of a composite thing are as real as the thing itself, that it is possible (in some sense) for them to exist apart from the whole of which they are parts, and that taken together they are *what* the thing is whether or not they are the thing. The doctrine that the parts of a composite either do not properly exist or are derivative upon the whole seems, despite Aristotle’s interest in it and Aquinas’s endorsement of it, always to have been a minority position. What the history also suggests, however, is that while the doctrine that what a thing is is its actual parts taken together is firmly embedded in our metaphysical tradition, it has never ceased to be problematic. Philosophy often progresses by rejecting the assumptions on which earlier debates are based but these assumptions seem particularly hard for us to give up. What lesson can we learn from that?”

²¹“To be sure, if we accept mereology, we are committed to the existence of all manner of mereological fusions. But given a prior commitment to cats, say, a commitment to cat-fusions is not a *further* commitment. The fusion is nothing over and above the cats that compose it. It just is them. They just are it. Take them together or take them separately, the cats are the same portion of Reality either way. Commit yourself to their existence all together or one at a time, it’s the same commitment either way. If you draw up an inventory of Reality according to your scheme of things, it would be double counting to list the cats and then also list their fusion. In general, if you are already committed to some things, you incur no further commitment when you affirm the existence of their fusion. The new commitment is redundant, given the old one. For the most part, if you are committed to the existence of a certain thing or things, and then you become committed to the existence of something that bears a certain relation to it or them, that is indeed a further commitment.” [Lewis 1991: 81–2]

were true or even possible that there are moments that require a whole to exist, because only in this whole do they find completion, then wouldn't this whole be irreducible to the moments, just because it includes the completion its individual moments do not have? Such a possibility would at least relativize the ontological or metaphysical conclusions that are drawn when only reducible wholes (i.e. material aggregates) are equalized with their material pieces, which is itself, within the limits of this ontological region, certainly not implausible. However, if we agree for example with K. McDaniel's argumentation in his 'Against Composition as Identity' and allow for irreducible wholes that have strongly emergent properties like "*phenomenal* properties or *qualia*" [McDaniel 2008: 131] that the parts themselves do not have, then we can share his conviction that wholes, "especially wholes enjoying emergent properties, are something 'over and above' their parts in the following sense: a mere description of the proper parts need not be a complete description of the emerging whole." [id.: 133]

3.1.3 Part-Whole Identity in Mereology

A third major topic in the contemporary discussion of part-whole relations concerns their logical formalization. The most prominent attempt to formalize such structures is called *classical extensional mereology* (CEM), to which I already alluded in the previous paragraphs. Basically, CEM is first order logic that is enriched with a few key concepts such as 'proper part' ($x < y$ if x is a part of a whole y and $x \neq y$), 'improper part' ($x = y$ if the whole is a part of itself), 'overlap' ($x \circ y$ if x and y have a part in common), 'disjointness' ($x \int y$ if x and y have no part in common), the 'universe' (the sum of all parts U), an 'atom' ($At(x)$), as well as three axioms that determine the transitivity, asymmetry and irreflexivity of proper parthood.²² These axioms mean that "if one object is a proper part of another and the second is a proper part of a third, then the first is a proper part of the third as well [transitivity]; if one object is a proper part of another, then the second is not also a proper part of the first [asymmetry]; and, finally, nothing is a proper part of itself [irreflexivity]. Thus, the relation of proper parthood is a *strict partial ordering*." [Koslicki 2008: 11–2] To these basic concepts and axioms we can add, for instance, a mereological notion of fusion, whereby the fusion is usually taken to be unrestricted (every possible relation of two or more proper parts can become a mereological fusion, what Simons [2006: 600] calls "*mereological maximalism*"),²³ principles of composition²⁴ and decomposition,²⁵ extensionality principles that determine that objects with the same parts are identical,²⁶ or plural variables, constants, quantifiers and predicates in order to create a plural logic that can describe fusions.²⁷

Regarding the ontological scope of classical mereology, Varzi points out that "mereology assumes no ontological restriction on the field of 'part'. In principle, the relata can be as different as material bodies, events, geometric entities, or spatiotemporal regions, [...] as well as abstract

²²Cf. Simons [2000: 9–17] and Koslicki [2008: 11]. On the concept of the Universe cf. Simons [2003].

²³Cf. Uzquinao [2006] and Cotnoir [2014: 16].

²⁴"For example, one may consider the idea that whenever there are some things, there exists a whole that consists exactly of those things – i.e., that there is always a *mereological sum* (or 'fusion') of two or more parts." [Varzi 2016]

²⁵"For example, one may consider the idea that whenever something has a proper part, it has more than one – i.e., that there is always some *mereological difference* (a 'remainder') between a whole and its proper parts." [id.]

²⁶Cf. Simons [2000: 1] and Cotnoir [2014: 17].

²⁷Cf. for an introduction Cotnoir [2014: 18–22].

entities such as properties, propositions, types, or kinds [...]. As a formal theory (in Husserl's sense of 'formal', i.e., as opposed to 'material') mereology is simply an attempt to lay down the general principles underlying the relationships between an entity and its constituent parts, whatever the nature of the entity, just as set theory is an attempt to lay down the principles underlying the relationships between a set and its members." [Varzi 2016] This ontological unrestrictedness or 'topic neutrality', which by definition should also include Husserlian moments, would make mereology a perfect candidate for a formal part-whole ontology that is not restricted to one region of reality alone.

At the same time, however, a mereological fusion is defined as a 'sum' of its parts, i.e. as the exact outcome of an 'and-relation', of a logical conjunction \wedge . "Something is a *fusion* of some things iff it has all of them as parts and has no part that is distinct from each of them." [Lewis 1991: 73] Yet we saw that in the case of moments and wholes, the whole necessarily includes the completion of its moments. It thus includes more than the parts taken as a sum. By the same token, in order to describe a mereological fusion, we have to think of and express the single parts of the fusion as ontologically distinguished or distinguishable from the fusion itself, just as we have to distinguish parts before we determine that they may overlap. To me it seems that this involves a certain independence and even an ontological priority of parts²⁸ pertaining to their possible fusion. In the framework of classical mereology, parts can, but do not have to, enter a mereological fusion in order to exist. Due to mereology's unrestricted universalism, this makes sense, because if every part necessarily had to enter a fusion with other parts in order to exist, reality would be overwhelmed with all kinds of weird fusions such as {Putin's left leg + the apple I just ate}. The two parts of this possible fusion can exist without being fused like this, and it is sufficient to classify the actual parts as existent while the possible fusion is not a further ontological entity.

Furthermore, it is a principle of CEM that for "any *xs*, those *xs* have one and only one fusion." [van Inwagen 1994: 207] This may be true if we restrict parts to their material dimension. But imagine, for example, a team of eleven professional football players during a match. Not only would this team stay the same if one player had to leave the field or be replaced (the goal counter doesn't start anew if a player who has the property of 'shot a goal in this match' is replaced). The eleven players also form more than one kind of fusion: a spatiotemporal fusion, a fusion of 'team spirit', a sub-fusion of the club's future history, a fusion of role models for fans and trainees, a symbolic fusion for football as a sport, a fusion of employees with an income way above average, etc. In short, whereas we do not actually encounter all kinds of part-whole relations that are formally possible in CEM, we do indeed actually encounter part-whole relations that do not seem to be formally possible or admissible in CEM.

One critical conclusion that can be drawn from this, is that, as D. Mellor formulates it, "we must derive the formal properties of our part-whole concept from those of part-whole relations, not the other way round. We cannot derive them from *a priori* intuitions about parts and

²⁸Cf. for example R. Cameron [2014], who holds the view that parts *ground* and *generate* the whole if they are arranged in a certain way, which of course, means that they have to exist prior to the whole. "What grounds my existence is not merely my parts, but my parts being arranged a certain way. Necessarily, those parts being arranged that way is sufficient for my existence, but all the parts could exist and I fail to exist if those parts are not so arranged, for then my actual grounds would not obtain. And those parts can exist and not be so arranged but I exist and be composed of *other* parts that *are* appropriately arranged." [Cameron 2014: 103]

wholes in general.” [Mellor 2006: 141] This means that we have to study actual occurrences of part-whole relations first before we put a formal, generalizing and unrestricted theory or model over it, because “Models are however one thing, reality is another.” [id.: 143]²⁹ With Lowe³⁰ and Simons³¹ we can draw another critical conclusion, namely that CEM, as a formal system, should not be (mis)understood as a formal ontology, because it seems to focus on and formalize only one kind of part-whole relation (detachable and independent parts, that are in reality instantiated by material entities and their primary qualities) without further determination of the existence conditions, the limits and the ontological applicability of such relations. Such a (mis)conception of CEM as an ontological theory that is supposed to range over *all* kinds of part-whole relations is held by what McDaniel calls ‘compositional monists’.³²

It should be evident by now and it will become even more evident in the subsequent chapters that I take compositional monism to be wrong. Neither are part-whole structures exhausted by material entities and their characteristics as pieces and aggregates, nor can all part-whole structures sufficiently and meaningfully be expressed in the *a priori* formalism of mereology. I hope to have shown in this brief section that in the light of the fourfold pattern the Husserlian part-whole ontology offers and in which almost every entity can be understood as (1) an ontological piece/aggregation, (2) an ontological moment/whole, (3) a perceptible piece/aggregation, and (4) a perceptible moment/whole at the same time, the current analytic debate on parts and wholes almost exclusively but not always acknowledgedly contents itself with (1) and (3). In the course of chapter 2, however, I showed that the aim of this project, which is the determination of the ontological nature of PWO, urges me to leave (1) and (3), and, in so doing, the just outlined aspects of the current discussion on independent parts and wholes, behind. While for most contemporary ontologists who work in the field of parts and wholes, (1) and (3) are the

²⁹Simons [2006] likewise argues that we should study the function of parts in natural, i.e. actual existing wholes, because unrestricted mereology’s “abstract considerations are so far removed from actual cases, they cannot be taken as reliable guides to a realistic ontology of part and whole.” [Simons 2006: 611]

³⁰“The upshot of all this is that the formal systems approach [to which Lowe explicitly adds mereology, M.S.] to ontology, which has been immensely popular in recent decades, gives the superficial appearance of taking ontology seriously and in a way that is conducive to realism, but in fact avoids any serious engagement with the true subject-matter of this branch of metaphysics. Instead of talking about entities of various different categories and attempting to specify their existence and identity conditions in a perspicuous way, select species of entities are chosen as *surrogates* for entities of other kinds and ontological discussion is transmuted into talk about these surrogates – for the sole reason, it seems, that a well-developed formal system happens to be available for talking about the surrogate entities in question. A spurious air of technical and scientific exactitude is thereby conferred upon the projects of these pseudo-ontologists, who in reality are not doing serious ontology but have merely changed the subject.” [Lowe 2011: 84]

³¹“But in particular it cannot be assumed that because the part-relation behaves in one way in one domain – in the ontology of spatiotemporal regions, say – that it must behave similarly elsewhere. All that can be guaranteed *a priori* is that the part-concept has the formal characteristics which are analytic of it. When it comes to the honest toil of investigating the principles governing what objects are parts of others, and what collections of objects compose others, it appears that most ontologists have been following the paradigm of abstract algebra when it would have been better to take a lead from sciences such as geology, botany, anatomy, physiology, engineering, which deal with the real.” [Simons 2006: 612–3]

³²“*Compositional monism* is the view that (i) there is exactly one fundamental part-whole relation and (ii) this relation applies to elements of every ontological category. According to the compositional monist, parthood is importantly similar in this respect to the relation of identity. Just as there is only one fundamental identity relation that applies to any entity regardless of what ontological category it belongs to, there is only one fundamental parthood relation. Accordingly, a congenial position for the compositional monist to hold is that the parthood relation is a formal logical (or ontological) relation, just as identity is.” [McDaniel 2004: 141]

way to go, for my own project they would mean a dead end. Moreover, it turned out in the previous chapter that a closer inspection of (2) is equally fruitless for the moment due to the apparent ontological *absence* of PWO. Therefore, the only remaining option consists in turning to the domain in which PWO seems to be *present* and to enrich the analysis of concepts, including the formal ontologies and models we may base upon such analyses, with what is actually given in and by the perceptible reality or realities in which we participate as perceiving entities.

3.2 Husserl's 4th Logical Investigation

Studying empirical perception is a valid (co-)method for ontological inquiries into reality insofar as it is perceptible. The legitimization of this method has been given in section 1.3: Only by being in touch with reality with our senses are we actually able to justify and – if necessary – correct the ontological categories we derive from our conceptual apparatus. Otherwise, we would remain in an unfalsifiable, self-sufficient model that pretends to be a model of reality, whereas it is actually a result of what can be called a logically coherent auto-analysis of an ontologist's most general concepts. For every complete ontological theory, however, this rather deductive and a priori answering of what I named the meta-ontological *quaestio facti* (where do we get which ontological categories from?) needs to be backed up with the rather inductive and a posteriori answering of the meta-ontological *quaestio iuris*: How can we justify the relationship of these categories with the world they are supposed to be about? After having derived the notion of PWO with its logical incoherency and thus its formal-ontological *absence* by going through the part-whole ontology offered by Husserl in the previous chapter, we have to reverse the deductive top-down approach. It has led us to an idea of PWO that demands the transcendence of the model in which we discovered it. By keeping in mind the characterization of PWO we developed in the course of the last chapter, the task is to restart our ontological investigation, but this time from the very bottom, from 'empirical grounds' (Lowe), and to scale up towards a more comprehensive conceptualization of PWO than a purely formal, a priori ontology could provide.

What has been identified as the inductive, empirical method in section 1.3 is sub-dividable into two branches: the analysis of ordinary expressions and commonsense judgments³³ and the actual performance of experimental research.³⁴ While chapters 4 and 5 will concentrate on the first branch, chapters 6 and 7 will continue the inductive method for ontological purposes by examining the perception of PWO with the help of experiments conducted by Gestalt-psychologists. However, confusion may arise concerning the reason for conducting the upcoming investigation on ordinary language. Why should we be interested in ordinary language at all when it comes to ontological research? Is ordinary language not known for its vagueness, arbitrariness, plurality, contingency and relative inconstancy? And are ontological categories not supposed to be the opposite: exact, unequivocal, universal, necessary and unvarying over time? Further, how and why is ordinary language supposed to be a bearer of empirical data from which any insights, in particular into the nature of reality and into PWO as an assumed ontological category, can be derived? Even if we agree that ontology should be authorized to

³³Cf. subsection 1.3.1.

³⁴Cf. subsection 1.3.2.

make use of empirical methods, which is certainly not a mainstream stance in this discipline, we can still doubt that ordinary language, whether on a syntactic, a semantic or a pragmatic level, can be a trustworthy indicator of sense data. It could also just be a way of formulating and communicating our a priori concepts according to ideal laws that themselves do not have to rely on empirical reality at all.

Besides, granted that ordinary language and the analysis of it yields truths about the nature of the world, was it not mentioned in subsection 1.3.1 that even proponents of this thesis like Hirsch, Baker, Smith, Elder and Paul more or less restrict the ontological region over which ordinary judgments range to material, medium-sized, familiar objects? The line of argumentation in the previous chapter, however, led us to the conclusion that the appropriate focus for the determination of the ontological nature of PWO does not lie in this material realm of perceptible pieces, but in the immaterial one of perceptible moments: of a content's secondary, perhaps even tertiary qualities. At least to this objection I can respond directly that medium-sized, material things may display the phenomenon of PWO, but it is not their materiality as such, i.e. their being built up of pieces, that should be the focus of our investigations. Especially from a common sense point of view and by making judgments about the world in our everyday life, the materiality of mid-size objects does not exhaust our ordinary concerns for how perceptible reality is structured and appears as meaningful to us. We will shortly see that linguistic expressions in which we commonly formulate concepts like part, whole and PWO, are – even if such expressions are *about* material objects – deeply connected not merely with physical reality, but with the way we are embodied and enworlded beings. Given the significance of such empirical circumstances, we have to strike a path that is only parallel to, but not congruent with the one trodden by contemporary philosophers who take ordinary judgments to be indeed a legitimate key to ontological issues, but predominantly for the domain of mid-size, familiar artifacts.

3.2.1 *Une Grammaire Générale et Raisonnée*

Another critical objection may be as follows: If I decide to take ordinary language as an indicator for the further determination PWO's ontological nature, generously granted that this is a valid approach, why do I not stay inside the Husserlian framework of the *Logical Investigations*? The very next Investigation after the one about the formal-ontological and perceptual nature of parts and whole that has been discussed at length in the previous chapter contains exactly what we seem to be looking for right now: the application of Husserl's part-whole ontology to matters of language, i.e. of meaning and grammar. As Aurora [2015: 8] writes, "In the fourth investigation, Husserl applies this theoretical framework [of the 3rd LI, M.S.] to a very special domain of objects, namely to expressions, which, in the terminology of the *Logical Investigations*, means linguistic signs which bear a meaning, that is a reference to a class of objects." Why is it necessary to sacrifice such a seamless transition from ontology to language for a rather abrupt change of context, without even knowing whether the upcoming discussion of PWO in the field of cognitive linguistics will yield any positive results – *granted* that it is valid for ontology at all? Indeed, next to the columns of 'formal ontology' and 'material ontology' in the 3rd LI in the tables above, we could just add another column entitled 'expressed meanings in language in Husserl's 4th LI', to which all the aspects of parts and wholes can be applied. In so doing, we could repeat the gradual construction of this table for this new column that then

specifically addresses linguistic meanings and utterances and is likewise aiming at an elucidation of PWO in this regard. The connectivity of this linguistic specification would be guaranteed at the least for the following reasons.

1. Because there are *simple* and *complex* wholes, there are simple and complex meanings, which, in turn, are expressed in simple and complex grammatical constellations of words (§2, 4th LI).
2. Because there are dependent and independent parts, there are dependent and independent meanings and therefore dependent and independent expressions of meanings. While dependent meanings/expressions are characterized as ‘syncategorematic’ and are by nature incomplete (we remember that every moment needs completion in a more embracing whole), independent meanings/expressions are ‘categorematic’ and as such make sense even without being embedded in a broader arrangement of meanings and expressions (§4). Just like dependent moments depend on, i.e. are founded by, independent pieces, syncategorematic meanings/expressions (e.g. linking words, prepositions, numerals, references to particular contents) are founded by categorematic meanings/expressions (e.g. nouns, verbs, adjectives, references to general objects).³⁵
3. Like parts in general, categorematic and syncategorematic meanings/expressions also cannot be combined arbitrarily, but make sense only when they are arranged according to predetermined sets of laws (§7).³⁶
4. To approach the matter of PWO in language, it could be pointed out that Husserl raises the question of why we are strangely able to understand the meaning of a syncategorematic part like “and” or “equals” even when it is isolated from a more comprehensive meaning/expression in which it finds completion and only through which it is normally supposed to be understood. As we saw in section 2.2.7 above, Husserl uses his distinction between formal and material ontology to allow for the isolation of dependent parts only in the case of the latter’s involvement of empirical perception, but not in the former’s realm of pure, a priori laws of logic. Such a distinction can again be discovered in the case of language. Although Husserl denies the possibility of the isolation of a syncategorematic

³⁵“Whenever we have a unified complex meaning, it is unified by some meanings in the complex being founded on others, maybe one-sidedly, maybe mutually. [...] There are complex acts of meaning, made up of other acts of meaning, for example, when I mean someone as *the man over there in the brown suit talking to the manager*. The whole complex act of meaning is concrete, its parts and their meaning are (in this context) dependent.” [Simons 1995: 119f] Husserl “founds the grammatical distinction on a semantic distinction between independent and dependent significations. So doing, he asserts the existence of two general subsystems in language that each contribute its type of meaning. The categorematic (or lexical) subsystem contributes independent significations that can be apprehended per se; the syncategorematic (or grammatical) one contributes significations that are unbounded, ‘vague,’ and ‘call for completion.’” [Bundgaard 2004: 59]

³⁶“Law involves specific determinateness of contexts: dependent and independent variables have spheres limited by fixed generic or specific characters.” [Husserl 2001: 59] “Due to the laws that govern the configurations of parts into wholes, independent parts (or moments) require not just any whole whatsoever, for they are not amenable to all sorts of completion; rather they require completion of a specific sort. Though Husserl does not conclude this himself, it follows from the above that the meaning contributed by syncategorematic expressions is *the general semantic frame or semantic structure within which they are to appear*.” [Bundgaard 2004: 59]

part from defined contexts of *fulfilling* meaning, because these rely on the unalterable, a priori, objective laws studied by formal ontology,³⁷ it is in our subjective *intentions* of meanings that we can single out and still understand syncategorematic parts. The necessary context for such a dependent part we then only think of and imagine in a vague, undetermined background from which, because this background is itself not defined and therefore not *actually* fulfilling, the part in question receives an *indefinite* completion of meaning (§9).³⁸ Thus in our mere intention of meanings, like in our mere perception, we keep in suspension both the independency *and* the dependency of moments, here taken as syncategorematic meanings/expressions. In our mere intention, a syncategorematic part possesses its normal attribute of being in need of fulfilment *and* it “is functioning abnormally only in not being connected with other expressions, which give normal utterance to the complementary parts of the meaning here in question.” [Husserl 2001: 61] We could say that in our mere intention of an isolated syncategorematic part, we imaginatively oscillate between this part *as* a part and a possible whole in which, *as* a possible whole, the part’s meaning can only be understood. Not until we utter this intended meaning do we find ourselves guilty of making a non-sensical expression, thus of expressing an a priori non-sensical meaning qua *fulfilling* meaning, not qua *intended* meaning.

In the light of this obvious applicability of Husserl’s part-whole theory, why should there be any reason to go beyond the Husserlian framework when it comes to the determination of the ontological nature of PWO by looking at linguistic expressions?

Irrespective of the validity and therefore potentiality of these objections, the main motive for going beyond the Husserlian framework is straightforward. In accordance with the argumentation given above that a comprehensive ontological theory should transcend the model in which its categories were more or less deductively derived in order to justify these categories with measures that are not self-imposed, we should not turn the application of these categories back into an affirmation of the model. We should not apply the results of the application of a model back to the model from which the initial application took place if we want to verify this model with external measures and if we want to avoid what can be called a ‘justificational loop’ between model and model-application. However, this is what I think Husserl is doing in his 4th LI. He applies the general notions of parts and whole to matters of language, i.e. meaning and grammar, but only to use language as an extension and affirmation, not as a critical overhaul of his part-whole theory. Husserl may be right in doing so, because naturally he wants to demonstrate the general applicability of his ontological part-whole schema.³⁹ By contrast, I prefer to be more cautious and (self-)critical in my further discussion of PWO. Instead of going

³⁷“Isolated syncategoremata such as *equals*, *together with*, *and*, *or* can achieve no fulfilment of meaning, no intuitive understanding, except in the context of a wider meaning-whole. If we wish to ‘be clear’ what the word ‘equals’ means, we must turn to an intuitive equation, we must actually (genuinely) perform a comparison, and following upon this, bring to understanding and fulfilment a sentence of the form $a = b$.” [Husserl 2001: 60]

³⁸Cf. on this also Mohanty [1976: 88]: “In the first place, a syncategorematic expression demands completion only on the *basis* of a certain definite meaning which it, even when isolated, conveys. The second point is a consequence of this: the supplementation that is demanded is partly determined by the intended meaning of the syncategorematic expression concerned. The supplementation demanded is no doubt indeterminate with regard to the content to be introduced; but with regard to the form, it is thoroughly determined in the sense that all possible supplementations are circumscribed by a priori laws.”

³⁹Cf. Husserl 2001: 49.

from language back to the *a priori* concepts of parts and whole, I want to ascertain whether or not there are empirical grounds on which linguistic structures concerning parts and wholes might rely. Thus instead of going from language ‘up’ again to the ontological concepts that are relevant for PWO, I think it is more promising to begin with linguistic phenomena and then ‘dig deeper’. Then we might be able to figure out if empirical reality itself, not just the way we think about it conceptually, is constitutive both for the way we use parts and wholes in our ordinary language and for the way our thus constituted language is interrelated with our ontological concepts – even if this would conflict with the Husserlian notion of the platonic ideality of concepts.

Moreover, it seems to me that in his discussion of language, Husserl extends only one half of his part-whole theory, namely its formal, but not its material side. If he had extended the latter, then Husserl would have had to take into account the actual diversity of particular languages and the manners in which concrete languages relate to the empirical world in order to be meaningful. Instead, Husserl decides to apply the objective and ideal domain of his formal ontology to language, whereby the latter’s meanings and expressions are then taken as objective and ideal as well. Consequently, the Husserl of the 4th LI is not interested in particular languages and their correlations with the empirical world. Husserl’s “relative indifference to actual empirical research on language” [Simons 1995: 121] is complemented by the positive aim of disclosing a rationalistic, formalistic “*grammaire générale et raisonnée*, a philosophical grammar” [Husserl 2001: 73] that forms the basis of every particular language.⁴⁰ However, it is problematic if not impossible to integrate reality-directed, dynamic and logically inconsistent notions like PWO into such a universal grammar, not only because this grammar would then certainly be “empirically contaminated [*getrübt*]” [id.: 74], amongst other things “by peculiarities of the individual and his life-experience” [id.: 73]. This grammar’s *a priori* “fixed system of forms” [id.: 64]⁴¹ would also be at odds with the potential of PWO to create novel, maybe unforeseen meanings via the ongoing dynamic interplay of part and part/whole in which the relational binding of all parameters is specifically not fixed and universally as well as logically static once and for all.

It seems that even an exclusive concentration on the subjective act of meaning *intention*, as was suggested in the fourth objection of the previous paragraph, would not help in answering the question if and how language offers valuable clues regarding the ontological nature of PWO. As soon as we take meaningful linguistic expressions and not merely more or less arbitrary and subjective acts of thought and intention as the subject matter of our investigations, we will again be confronted with the meanings of these expressions. And according to the Husserl of the LI, even syncategorematic meanings are located in the ideal realm described by formal ontology where PWO, as we have seen, has no place. The path of meaning intention is thus a dead end for

⁴⁰“But here, as elsewhere where philosophical interests are concerned, it is important to separate the *a priori* sharply from the empirical, and to recognize that, within this widely conceived discipline, the findings of formal semantics relevant for grammarians have a peculiar character: they belong to an *a priori* discipline that should be kept apart in its purity. [...] To whatever extent the actual content and grammatical forms of historical languages are thus empirically determined, each is bound to this ideal framework: theoretical research into this framework must accordingly be one of the foundations of the final scientific clarification of all language as such.” [id.: 73–4]

⁴¹“Meanings only fit together in antecedently definite ways, composing other significantly unified meanings, while other possibilities of combination are excluded by laws, and yield only a heap of meanings, never a single meaning.” [id.: 62]

PWO taken as a category of reality itself: This path neither leads to meaningful language as a bearer of ontological information, because only objective meanings lead to meaningful language, nor does it lead to perception and experience, because our understanding of syncategorematic parts via a vague imaginative background is only a matter of thinking, not of actually perceiving reality as such or such with our senses.⁴² In fact, this path does not lead to reality and its objects at all, because there is “no strict correspondence between meanings and objects” [Mohanty 1976: 91], as independent meanings (e.g. ‘redness’) can denote dependent objects (redness as a real object, which is a moment of independent material pieces) and vice versa.

Also, there appears to be no strict correspondence between subjective intentions of meanings (as ‘meaning-acts’) and objects in the world, because the aforementioned incongruity between meanings and objects is based on the incongruity between both intentions and meanings and between intentions and objects: “The possibility of independent meanings directed to non-independent ‘moments’ is not at all remarkable, when we reflect on the fact that a meaning ‘presents’ an object, but does not therefore have the character of picturing it, that its essence consists rather in a certain intention, which can be intentionally ‘directed’ to anything and everything, to what is independent as much as what is non-independent. Anything, everything can be objectified as a thing meant, i.e. it can become an intentional object.” [Husserl 2001: 60] The *intention* of real objects is thus independent of these objects and therefore does not need to correspond one-to-one with the latter: intentional objects do not necessarily have to correspond with real objects, although they factually often do. We cannot take it for granted that an analysis of PWO as an intended object (just as little as an intended meaning) can yield any positive, justified results concerning the ontological nature of PWO as a really existing, objective aspect or category of reality, notwithstanding its subjective perceptibility.

For all of these reasons, it does not seem to be very advisable to continue with Husserl’s 4th LI for a linguistic elucidation of PWO’s ontological nature. As Bar-Hillel [1957: 368–9] concludes his discussion of the 4th LI, Husserl’s very definition of language precludes from the outset any positive empirical research into the structure of natural language: “There is only one way of arriving at the common ideal grammatical framework of all empirical languages, namely by departing from the very definition of language. Nothing belongs to that framework that does not follow from this definition. The justification for an *a priori* statement that all languages contain, say, words and sentences can only be that this must be so by definition. But whether all languages contain nouns, or negation-signs, or modal expressions, after a general definition of noun etc. has been given, if this definition forms no part of the definition of language, can only be established by empirical investigation. [...] However, the last word about the exact relationship between logical syntax and the empirical sciences such as psychology and sociology, has not been said yet.”

3.2.2 Towards Cognitive Linguistics

To the last arguments one might respond that in spite of the plausibility of the foregoing argumentation in favor of leaving the Husserl of the LI behind, we should not throw out the

⁴²“We understand an isolated ‘and’ either because the indirect, verbally unexpressed thought [!] of a *certain familiar conjunction* gives it an unusual meaning, or because vague, un verbalized presentations of things help us to form a thought [!] of the type *A and B*.” [Husserl 2001: 61]

baby with the bath water. Perhaps there is still a hint in Husserl's 4th LI that is significant for the empirical path towards PWO. To this end, we have to look at the relationship between expressed meanings and meaning intentions again, thus at the semantic level of language. P. Bundgaard demonstrates that the 4th LI is actually divided into two parts, of which only the second (§§ 10–14) refers to ideal, a priori and universal laws on which every natural language and even logic is based. This second part concerns the syntactical structure of language and is, due to its renunciation of empirical matters, inapplicable to our further investigations. The first part (§§ 1–9), however, deals with the semantic layer, and it is here that Bundgaard detects an important connection with recent empirical studies in cognitive linguistics.

For both Husserl and cognitive linguistics, Bundgaard argues, the meaning of words and sentences is neither encased in language itself, nor in the two-place relationship between language as a truthmaker and the world as a truthbearer. Instead, the expressed meanings of language first and foremost tell us something about the intentional mind and only via the intentional mind something about the world in which the mind with its intended meanings is embedded.⁴³ As we have seen in the preceding paragraph, this relationship between mind and language does not have to be a one-to-one picturing relationship, in which every linguistically expressed meaning is an exact picture of its antecedent intention. The meaning of what we say or write does not necessarily need to correspond with how we intended it. Still, as Bundgaard puts it, Husserl and cognitive linguistics share the claim “that predicative structure is rooted in ante-predicative structure, or that *linguistically articulated signification* is not exhaustively describable in its own, grammatical terms, but is tributary to specific *meaning conferring* and *meaning fulfilling* acts and the latter's essential structure. It is therefore no surprise that cognitive linguists have explicitly acknowledged their debts to phenomenology; yet rarely, if ever, directly to Husserl; rather, indirectly, *via* M. Merleau-Ponty.” [Bundgaard 2004: 52]

It is exactly this shared assumption that the study of semantic language discloses relevant meaning-fulfilling (not necessarily meaning-generating), prelinguistic structures of the mind that can lead us from Husserl to relevant aspects of cognitive linguistics. The use of natural language enables us to express prelinguistic meanings, which means that meanings precede language and that expressible meanings can be located in the mind,⁴⁴ even if they can still originate elsewhere. Thus if we want to investigate if and how ordinary judgments about parts and wholes, including their interplay as PWO, can tell us something about their ontological nature, we are directed to the structure of the mind that makes and expresses such judgments. Let us therefore hypothesize that language could give us important clues about the way we cognize PWO as a meaningful ontological category. The switch from Husserl to cognitive linguistics is then justified by at least three reasons.

⁴³“Finally, it should be stressed that the object ‘language as such,’ which is assessed in this functional approach, is not accessed as a self-contained, autonomous object, i.e., by virtue of its specific essence qua that kind of object, but rather by virtue of its being an object whose essential function is to be a symbolic vehicle, a means of expressing, faithfully reflecting, and rearticulating already formed, structured, or configured pre-linguistic contents of meaning acts.” [Bundgaard 2004: 59]

⁴⁴“In his Investigation, Husserl did inaugurate a fundamental idea shared by both Chomskyan grammar and cognitive linguistics: the study of language tells us a lot about the mind. Yet, I believe that his point is much more cognate to the latter than to the former: if language reveals anything essential about the mind, it does so not because the mind is ‘structured’ like a language, but on the contrary because language, to the extent that it expresses and articulates what the mind ‘has in mind,’ is structured like the mind.” [Bundgaard 2004: 53]

Firstly, the Husserl of the 4th LI, after locating meanings in acts of meaning intention, further traces them back to a Platonic realm of universal laws and ideal meanings, where the formal ontology of parts and whole is also situated. Cognitive linguistics on the other hand lets meanings originate in our embodied being-in and perceiving the world, including the particular cultures and linguistic communities every person makes part of, which is included in what Husserl would later call the *Lebenswelt*. This empirical and ‘inner-wordly’ turn is crucial if we want to respect the inductive answering of the meta-ontological *quaestio iuris* in the context of PWO.

Along with this first reason goes a second one. Husserl is not concerned with the natural languages in which all of us communicate, but he aims at developing of a pure grammar, a “pure theory of meaning forms [...] that must lay bare an ideal framework which each actual language will fill up and clothe differently [...]”. [Husserl 2001: 74] Thus, while Husserl seeks the unification of language by stripping away its empirical and cultural diversity, cognitive linguistics, as we will see in a moment, takes this diversity as a starting point to reveal meaning-fulfilling structures of the embodied mind that can (and should) vary in cultural space and over historical time. Again, such a rather ordinary and contingent conception of meaning seems to be in accordance with our commonsensical and varying judgments about parts and wholes, even if this would ultimately lead to a pluralistic ontological framework into which the notion of PWO can fit.

Thirdly, although the second part of its name may suggest otherwise, cognitive linguistics does not restrict meaning to linguistic meaning and its intentions, but takes meaning to be as broad as possible.⁴⁵ As cognitive linguist M. Johnson, on whose research I will concentrate in the following sections, accentuates: “How can *anything* (an event, object, person, word, sentence, theory, narrative) be meaningful to a person?” [Johnson 1987: 2] Linguistic, propositional meaning is thus only a subcase of meaning or meaningfulness in general. Such a generous conception of meaning, in which the meanings of propositions are closely connected with the meanings of non-linguistic domains such as perception, values, abstract concepts, nature or other persons, does not come to the foreground in Husserl’s 4th LI, in which meaning is a “special field” [Husserl 2001: 49] consisting of linguistically expressed meaning-acts that are based on a priori laws of meaning. Not switching from Husserl to cognitive linguistics would thus mean reducing the possible meanings of PWO to linguistic as well as a priori meanings from the outset. As ontology is primarily concerned with reality in general and the proper nature of entities, however, any ontological research into meaning or meaningfulness should consider the latter in the broadest sense possible instead of neglecting fundamental aspects of it. This is in accordance with commonsensical judgments such as “this makes sense” or “x means something to y”, which are not restricted to whether a proposition is true or not. For these reasons, it is advisable to use the common ground between Husserl and cognitive linguistics, i.e. the prelinguistic structure of the intentional, meaning-fulfilling mind, in particular concerning parts and whole, as a swivel plate from which we then move on in a different direction.

To conclude, let us have a look at two examples given by Bundgaard of how linguistic expressions can reveal basic intentional properties of the mind. It is clear that we are not yet in the position to relate these properties back to reality or to present a systematic analysis of them as basic structures of the mind, let alone to arrive at any insight for our ontological project

⁴⁵Cf. subsection 4.1.2.

concerning PWO. To do so, it would be necessary to inspect at least one concrete theory of cognitive linguistics, which is the task of the following chapter. But in the context of the next chapter's aim to relate experience (here taken as empirical perception in an active, embodied sense that I will also elucidate anon) and meaning qua general meaningfulness, Bundgaard's examples can serve as an initial impression of how the first two stations of the bidirectional path *language* \leftrightarrow *mind* \leftrightarrow *body* \leftrightarrow *reality*, of which the here followed epistemological order goes from the left to the right and the thus reconstructed ontological order goes from the right to the left, is shared by cognitive linguistics and the Husserl of the 4th LI alike, despite their apparent discordance concerning the station 'reality' (empirical-contingent vs. Platonic-ideal).

For the first example, Bundgaard relates two independent linguistic parts that Husserl would classify as 'categorematic' with a set of dependent 'syncategorematic' parts consisting of the coordinating conjunctions {but; and; or}. The categorematic parts are:

1.1 They are married.

1.2 They do not live together.

Both 1.1 and 1.2 can be connected either with 'but', 'and' or 'or' in order to formulate a semantic whole for the three parts involved. The semantic whole must already be intended by the mind for it to be expressed in language. "If a representation exists that combines 1.1 and 1.2 into one complex representation, then, Husserl claimed, there must be a semantic correlate to that global representation, and to the semantic form there must be a specific grammatical correlate, i.e., a way of faithfully expressing the intended meaning. This means that not only the partial representations, but also the intentional form of combination should be expressible." [id.: 66] In the case of 'but', the expressed intentional form then sounds as follows: 'They are married, *but* they do not live together.' The semantic level of this sentence then enables us to open up a field of possible meaning-intentions of which each could have found their expression in this sentence. But no matter if the meaning-intention consisted in, for example, the expression of a moral standard (they *should* live together), a progressive statement (they do not need to live together *although* they are married), a descriptive information, or some sort of suspiciousness (why don't they live together when they are married, i.e. what is going on in this marriage?), there is one commonality all of these concrete intentions share: the contrasting meaning of the 'but'. "Thus, the meaning of 'but' could be characterized as follows: in a complex construction compounded with 'but,' whatever is to the left of 'but' and whatever is to the right of it are intended as 'contrasting' or 'conflicting' contents in some respect; they take on this additional, and crucial, semantic value by virtue of the dependent content that combines them. Thus, dependent contents do not simply require determinate contexts; in fact, their meaning *is* the kind of semantic whole into which the partial significations are combined." [id.] Given the frequency of the word 'but' in the most diverging contexts and languages, given its most general meaning of 'contrasting' two or more categorematic parts by providing them with a certain semantic value, and under the assumption that language is a manifestation of intentional structures, we can conclude that 'contrasting *a* with *b*' – as simple as it may sound – is an essential and meaningful structure of our mind. Of course, such a structure can and should then be further analyzed as well as related to our ways of perceiving or being embodied in the world, which is, however, not Bundgaard's own intention in the article I am referring to here.

For a further example, Bundgaard draws on L. Talmy's 2000 book *Towards a Cognitive*

Semantics. Therein, Talmy demonstrates, amongst other things, that the use of prepositions in sentences and the intentionality behind this usage can also provide us with insights regarding the structure of the mind, in this case its perspective nature. Bundgaard cites the following two sets of sentences:

2.1 The cat is *on* the car. **2.2** The cat is *in* the car. **2.3** The cat is two feet *from* the car.

3.1 The boat is *on* the water. **3.2** The boat is *in* the water.

Via their respective syncategorematic propositions (*on*, *in*, *from*, *on*, *in*), the meanings of both sets of sentences are expressions of certain mental conceptualizations of the categorematic parts (the cat / the car; the boat / the water). The propositions of the first set of sentences reveal that in **2.1**, the car “is conceptualized as a *surface* (with all other properties abstracted away); [in **2.2**] as a *volume* or a *container* (with all other properties abstracted away), and [in **2.3**] as a *point*. What the examples reveal is that a specific mode of perceptually intending the car is specified by the prepositions, namely to the effect that only certain of its spatial properties are referred to, while all others are neglected.” [id.: 69–70] Thus when the speaker of these sentences is intending the car as an independent, perceptible object, she is not intending the whole car with all of its properties, but only a very rough, spatial schema of it in relation to which the cat is situated. While the three sentences of the first set describe three different states of affairs with three corresponding intentions, the two sentences of the second set describe only one state of affairs but with two corresponding intentions, which proves the above mentioned Husserlian insight that there is no one-to-one correspondence between intention and world. According to Bundgaard, the usages of *on* in **3.1** and of *in* in **3.2** not only correspond with the schematization of ‘the water’ as a surface and a container respectively. They also tell us something about the perceptive point of view from which the observer schematizes the factually invariant scene. **3.1** would presuppose a rather “*distal* point of view from which the water is given in experience as a homogeneous plane (no significant or perceivable movement of waves, etc.), whereas ‘in’ specifies a *proximal* point of view from which the water is given in experience with its mass and voluminous character (waves licking the hull, etc.).” [id.: 70] Such a perspective point of view can never be incorporated in a classical theory of truth in which there is only a two-place correspondence between language and world. “Basic semantic features displayed in language are simply not assessable in purely linguistic terms. They are essentially grounded on characteristics and structures of perception and intentional experience as such. Thus, in cases of alternations in schematization, the differences are readily – and sometimes quite subtly – reducible to gestalt differences between figure/ground structures in the experienced referent scene, intentional distribution of attention to a reference scene, perspective, and modes of perceptual apprehension.” [id.]

This means that we have to take natural language as a starting point, but then go beyond language and insert the structure of the intentional mind, including – as we will see below – its own basis, the human embodiment in the empirical world, as a third, indispensable factor if we want to derive ontological insights about reality from ordinary language at all. For the attempt at determining the ontological nature and status of PWO, the Husserl of the 3rd and 4th LIs drops us at exactly this point. If there is anything further to determine about PWO, we have to swivel the focus, bracket the formal part-whole ontology of the 3rd LI with its ideal meanings and logical coherence, and pocket the acquired technical terms of the *quaestio facti* in order to turn to the empirical realm of prelinguistic embodiment and the semantics of natural,

ordinary language. This is the point where it is time to bow out of Husserl's a priori constructs of ideas and to address relevant aspects of cognitive linguistics, under reference to the ties between the two established by Bundgaard. As he rightly accentuates, the benefits of cognitive linguistics not only lie in its interest in language as such, but in its embracing of "comprehensive cognitive theories that study and lay bare (1) the relative dependence of linguistic structure on prelinguistic structure; (2) the essential tenets of prelinguistic structure; and, finally, (3) the design features of the linguistic system that make it capable of systematically expressing and re-articulating such a conceptual structure." [id.: 72]

This is not to say that all cognitive theories and theorists are equally important for the present project. In fact, given the enormous body of literature on all aspects of linguistic phenomena that has been published under the label of cognitive linguistics since the second half of the last century, I would like to concentrate on the works of M. Johnson, including contributions by scholars who published on Johnson's ideas and joint publications by Johnson and his colleague G. Lakoff. Johnson can be considered as one of the most prominent and influential figures of cognitive linguistics. What is more, his approach is highly philosophical in that he constantly relates philosophical topics to research in linguistics and empirical perception. In so doing, his theories stand out among those of other cognitive linguists. Equally important for my own project, Johnson not only extensively discusses the philosophically significant notions of metaphor and image schemata, but he also addresses the subject of metonymy, which is the field, however, where I also have to go beyond Johnson, as he (and Lakoff) himself only touches upon this subject of research within cognitive linguistics. If we take linguistic meaning to be an indicator of intentional meaning, then these not exclusively linguistic forms (metaphor and metonymy) might reveal how our mind schematizes parts-whole relations and how such relations are generated by our bodily being in the world and perceiving our environment with our senses. Hypothetically, it might even tell us something about PWO as an ontological category of reality that is incorporated by the body, schematized by the mind and expressed in language. By all means, for any part-whole ontology based on ordinary language and empirical grounds, an investigation into the cognitive linguistic notions of metaphor and metonymy is a golden opportunity.

The final reason why I want to concentrate on Johnson's cognitivist theory is closely related to the previous one. Johnson claims to defend an 'embodied realism', but the scope of his investigations and examples seldom exceeds the domains of language and mind/embodiment. It seems to me that in his works, the pretended 'realism' only gets a raw deal compared to the rather subject-oriented topics. As Johnson denies any strict dichotomy between a real existing outside world and the subjective understanding of it, however, it would be enlightening for any ontological reading to know more about the way reality itself is structured *so that* the human mind and body can find their proper place in it. Of course, such an ontological focus transcends the limits of any cognitivist research, but nonetheless, I think that this question treats one of the philosophical consequences of cognitive linguistics à la Johnson (and others). Furthermore, it is of particular importance for any ontological determination of PWO, which is my motivation to address the somehow 'suppressed' yet pretended realism of Johnson's cognitivist theory, i.e. Johnson's hidden ontology, with a special emphasis on part-whole relations.

4 Cognitive Linguistics I: Meaning and Conceptual Metaphor

4.1 The Inchoateness of Linguistic Meaning and A Priori Reasoning

There is a certain irony the notion of meaning involves. Meaning is meaningless unless what meaning means is specified. But any specification of meaning in terms of ‘what is the meaning of meaning?’ presupposes what we ask for when we want to determine the meaning of meaning. It presupposes the determination of meaning itself. Thus if we want to determine what meaning means and if we want to avoid reasoning in circles, we have to transcend meaning in and for itself. As a first step, it is adjuvant to draw on our pre-understanding of meaning. Everybody understands the word ‘meaning’, just not always in the same way. This is because pre-understandings in general are never localizable in a Platonic realm of clear, universally valid and immutable ideas that we can all grasp (how many *mis*-understandings and their consequences would have been prevented if this were the case!). Rather, the vague and versatile nature of pre-understandings points to the fact that they depend on historical, cultural and personal circumstances in the widest sense possible, which is also the case when we claim that something or somebody has meaning or that something or somebody is meaningful.

Such an articulation of the pre-understanding of meaning is insightful, because it shows us that any pre-understanding of meaning takes meaning to be a relational notion. There is always *something* or *somebody* that/who *has* meaning or that/who *is* meaningful. Meaning-assignments are inseparable from a meaning-bearer that is supposed to be meaningful when we say that this or that or he or she has meaning. In addition, our pre-understanding of meaning not only discloses that meaning is always a meaning *of* something, but meaning is also meaning *for* something or somebody, namely for the agent who assigns a meaning to the meaning-bearer. Any meaning is thus the nexus between its own *of* and its own *for*. Without any further specification, the attempt at approaching meaning by saying that it relies on our pre-understandings of it already reveals that meaning implies its own dyadic relation, the relata of which are formally presupposed. In short, if we want to know more about the meaning of meaning, it can be promising to take into consideration firstly the specific, often unthematized context in which the notion of meaning comes into play, secondly the variable ‘meaning of’ and thirdly the variable ‘meaning for’.¹ This is not much for the beginning, but it helps us to

¹This distinction between ‘meaning of’ and ‘meaning for’ is suggestive of W. Overton’s distinction between ‘I mean’ and ‘it means’. Both pairs are correlative, or, as Overton [1994: 1] puts it, they possess in all of their elaborations within various “domains of inquiry and across levels of analysis [...] [an] underlying relational matrix.” However, Overton’s distinction explicitly separates persons (*I mean*) from objects (*it means*): “When we focus on the ‘I mean’ pole of this relationship, we focus on the contribution of the person

escape the Münchhausen trilemma of understanding the meaning of meaning as an unrelational notion.

If we look at philosophical approaches towards part-whole relations in order to investigate PWO, then three contexts of meaning can be distinguished. Although these three contexts not only apply to part-whole relations, but to the nature and range of meaning in general, they enter into force in the philosophical literature on parts and wholes as well. Firstly, there is what philosopher and cognitive linguist M. Johnson calls ‘the conceptual-propositional theory of meaning’. Johnson characterizes this ‘theory’, which is actually not a fleshed-out theory of a single philosopher but rather a contextual stance that many theories incorporate and vary, as follows:

“Sentences or utterances (and the words we use in making them) alone are what have meaning. Sentences get their meaning by expressing propositions, which are the basic units of meaning and thought. Propositions typically have a subject-predicate structure. Our language and thought are thus meaningful to the extent that they express propositions, which allow people to make assertions about the way the world is and to perform other speech acts, such as asking questions, issuing commands, pleading, joking, expressing remorse, and so on. Our capacity to grasp meanings, and our capacity for reasoning, depends on our conscious use of symbolic representations in the mind that somehow can relate to things outside the mind. These symbolic representations (usually thought of as concepts) are organized into meaningful propositional structures via formal rules of syntax, and then the propositions are organized into thoughts and arguments via formal rules of logic. According to this objectivist semantics, neither the syntactic rules, nor the logical relations, nor even the propositionals themselves have any intrinsic relation to human bodies.”
[Johnson 2007b: 8]

Johnson traces the context of such a philosophical stance towards meaning back to Frege’s claim that propositions would be “the basic units of human meaning and thought” [id.: 9], which had an immense impact on 20th century analytic philosophy. Not only the lion’s share of the analytic mereologists that I have discussed in section 3.1, but also the Husserl of the 4th LI, which is a direct and linguistic consequence of his part-whole ontology developed in the 3rd LI, presuppose and even argue in favor of this stance. Although Husserl does not deny the significance of subjective intentionality for the linguistic expression of meanings, he locates the source of meanings in a mind-independent realm of objectivity from which we can grasp them. He also reduces the expressibility of such meanings to a formalizable language, i.e. to a pure grammar that he is eager to discover.² We can generally say that according to the ‘conceptual-propositional’ stance, the domain of the variable ‘meaning of’ is limited to

to meaning. The ‘it means’ pole focuses us on the contribution of the manifest world of common sense.” This is the reason why I prefer to operate with the more neutral distinction between meaning for and meaning of, because it does not necessarily imply a polarization of persons on the one side and objects on the other. For example, organic entities of nature (animals, plants) or artificial intelligences could also embody a ‘meaning for’ and not only a ‘meaning of’ (e.g. a flying ball could be said to have meaning for a dog), while persons can create a ‘meaning of’ to other beings for which it is a ‘meaning for’.

²“And if the verbal resources of language are to be a faithful mirror of all meanings possible *a priori*, then language must have grammatical forms at its disposal which give distinct expression, i.e. sensibly distinct symbolization, to all distinguishable meaning forms.” [Husserl 2001: 55]

propositions, including linguistic utterances that express propositions. Propositions relate to a supposedly mind-independent external world and can be defined as “the primary bearers of truth and falsity” [McGrath 2014], whereby a (expressed) proposition is true and therefore meaningful if it corresponds with something that is a priori objective, like a matter of fact in the external world or a universal idea.

Particular natural languages are no indicator for the truth or falsity of a proposition, because one and the same proposition can be expressed in more than one natural language (e.g. ‘The cup is red’, ‘Die Tasse ist rot’, ‘Het kopje is rood’, ‘La tazza è rossa’ all express the same proposition). The ‘meaning of’, which is the (expressed) proposition, thus depends on a strong conception of mind-independent reality and on the reducibility of language to propositional, formalizable structures and formalized symbols. These structures and symbols “get meaning by mapping directly onto that objective reality. Reasoning is a rule-governed manipulation of these symbols that gives us objective knowledge, when it functions correctly.” [Johnson 1987: xxi-xxii.] From this perspective, the objective reality as such does not have meaning in itself, but is rather the necessary condition for propositional meaning. “Meaning is a matter of how our concepts map onto or pick out aspects of this mind-independent objective reality.” [Johnson 2008: 45] Therefore, if we want to show that a (expressed) proposition is meaningful, it should be principally possible to “give the conditions under which it would be true, or the conditions under which it would be ‘satisfied’ by some state of affairs in the world.” [Johnson 1987: xxiii].

This limitation of meaning to (expressed) propositions fits with a limitation of the domain of the variable ‘meaning for’. For what or whom is a proposition meaningful? Of course, a proposition is meaningful or meaningless for anybody who thinks and reasons and communicates via accessible concepts. This means that propositions can be meaningful for basically every rational animal, provided that rationality is a potentially correct mirror of objective reality. But the limitation involved in the ‘meaning for’ arises when we take a closer look at how and when propositional thinking takes place. As Johnson’s characterization of this stance describes, the rational organization of concepts into meaningful propositional structures (which is supposedly done by every rational animal) and the deductive organization of these structures into thoughts and arguments via formal logic (which is actually done by a comparably small group of professional logicians) are conscious and disembodied activities. The agent who forms and expresses a proposition, thus the agent who ‘grasps’ a meaning and relates it to the external world, has to be fully aware of this act. She knows what is going on in her mind in order to pick out concepts, form a proposition and express it according to her act of meaning-intention. The ‘meaning for’ thus applies only to conscious rational animals, or to rational animals in conscious moments of self-inspection. But the limitation of this variable’s domain of appropriateness is even stricter. Not only has the agent to be conscious of her propositional thinking and expressing, she also has to be disembodied, i.e. detached from the reality her propositions are about. Only in so doing, can the intended proposition be compared without bias and risk of falsification with the correspondent state of affairs in the world.

The agent’s act of meaning-intention in the ‘conceptual-propositional theory of meaning’ has to be the *tertium comparationis* between proposition and reality. As Johnson writes, the conceptual-propositional stance presupposes a God’s eye view on reality, “that is, a perspective that transcends all human limitation and constitutes a universal valid reflective stance. For example, meanings are treated as relations among symbols and objective states of affairs that

are independent of how any individual person might understand or grasp those relations. It is alleged that there is a position *outside* this relationship from which the fit of symbol and thing can be judged. Concepts are said to stand in logical relationships as a matter of objective fact, regardless of how humans might comprehend them or organize them into systems.” [id.] Thus neither the particular structures of our bodies and minds, nor the natural languages with which propositions are generally expressed, seem to matter for the ‘meaning for’ aspect of the conceptual-propositional stance of meaning. Meaning is supposed to be free from all kinds of empirical contingencies: Propositional meaning is meaning *for* a conscious, disembodied rational animal. Because such a rational animal can be as rational as the propositions it grasps (the remainder – if there is any – is subjective irrationality), one could even say that the ‘meaning for’ is reducible to the ‘meaning of’. The God’s eye view does not interfere between proposition and reality; it only mediates by surveying passively without adding any proper surplus to this relation. Everything that points to subjectivity, except for the pure act of thinking *as* deducing, falls out of the equation between proposition and reality, thus even out of the infamous view from nowhere. Therefore, this stance of meaning is in line with what I have introduced above³ as the *deductive* method of ontology, only applied to one special ‘theory’ or layer of meaning.

4.1.1 Propositional Meaning, Perceptual Meaning and Situational Meaning

Although the conceptual-propositional stance towards meaning as a direct relation between language and world has been the dominant view in the 20th century (analytic) philosophy of language and logic, Johnson suggests regarding the linguistic function of meaning in a significantly broader context. This context, which can be studied by empirical methods and explained by empirical correlations, comprises our everyday, conscious as well as unconscious, rational as well as emotional, understanding of situations that have meaning for us. According to Johnson, the conceptual-propositional stance is inadequate, because “‘meaning’ in these traditions has very little to do with what people find *meaningful* in their lives.” [Johnson et al. 1980: ix] Words and sentences can indeed be meaningful, but the domain of the variable ‘meaning of’ is infinitely richer, because not only linguistic meaning is covered by the legitimate question of how “can *anything* (an event, object, person, word, sentence, theory, narrative) be meaningful to a person?” [Johnson 1987: 2] Basically everything can be meaningful, not only true statements about worldly states of affairs.

Such an expansion of the ‘meaning of’ domain naturally enlarges the ‘meaning for’ domain, because the rationality, cognitive awareness and disembodiment that are presupposed for making true propositions about the world are no longer the only guarantors of meaningfulness. “We are concerned with how *real human beings reason* and not with some ideal standard of rationality. We are concerned with *what real human beings grasp as meaningful*.” [id.: 11] It is known that real human beings, however, do have a body, perceive with their senses, have emotions and values, are members of cultural, social and historical settings, and are not always rational in their attempts at making sense of the world. The problem should therefore not consist in how to reduce the applicability of ‘meaning of’ and ‘meaning for’ to propositional truth makers

³Cf. section 1.2.

and external truth bearers, but in how to manage the undeniable richness and translinguistic dimensions of these domains. This implies that we should trace their variety back to grounds of meaning they, and thus we, all share but at the same time, implement in the most varied ways.⁴ Meaning in this regard is not the reference of propositional language to worldly states of affairs, but rather a sort of sense-making both of the ‘meaning of’ (x makes sense to y) and the ‘meaning for’ (y makes sense of x).⁵

We have seen above how the Husserl of the 4th LI assesses the role of subjective intentionality when it comes to linguistic meaning.⁶ Although Husserl refuses to grant psychological acts a meaning-generating function, he indicates that meaningful linguistic expressions can tell us something about how intentional acts fulfill meaning. Thus, albeit only in outlines, he enhances the status of the ‘meaning for’ in relation to the ‘meaning of’ in the process of meaning-generation. This is a first step in the direction of Johnson’s stance towards meaning. For the relations of parts and wholes, on which I would like to focus, the Husserlian reference to subjective acts of meaning-mediation (from universal concepts to linguistic expressions) gives rise to the significance of the ‘meaning for’, which is no longer just a free floating mind with a rationality for which all concepts and propositions are transparent and graspable. How we intend part-whole structures as meaningful and how we express them in meaningful language are overlapping, if not congruent aspects of one and the same consistence of part-whole meaning. The realization of this coherence between language and intentionality then allows us to make valid inferences from linguistic forms of expressions to the structures of our intentional mind without reducing the scope of the latter to the limits of the former. Once we have thus revaluated the status of the variable ‘meaning for’, there is nothing to stop us from asking, “But why should only propositions have meaning, whereas we experience infinitely many other aspects in life as meaningful, too? Language, be it formal language or natural language, may be an expression of propositional meaning-bearers, but given the infinite range that can be covered by the meaning-intentions of the ‘meaning for’, aren’t there other bearers of meaning as well?”

In order to recognize the nature of the ‘meaning of’ in the light of the enriched and correlated ‘meaning for’, we have to do two things. Firstly, it is crucial to acknowledge and to analyze the structure of the ‘meaning for’, which is located in all possible acts of meaning-intentions. “*Intentionality* is the capacity of a mental state or of a representation of some kind (concept, image, word, sentence) to be about, or directed at, some dimension or aspect of one’s experience. Meaning, I am claiming, is irreducibly intentional in this sense: The capacity for a mental event

⁴“The hypothesis of the unity of the notion of meaning is not an insistence on a single unified literal concept ‘meaning’; rather, it is a commitment to the existence of a series of connections among the various senses of ‘means’. It is a commitment to the conviction that we are unified human beings and not a cluster of autonomous modules. It is a commitment to the ‘cognitive semantics’ view that humans have general cognitive mechanisms which can be specified to particular functions. So, linguistic meaning turns out to be a special instance (perhaps the most central) of our capacity to have meaningful experience.” [Johnson 1987: 176–7]

⁵“It should now be more evident how cognitive semantics transforms the notion of meaning considerably in contrast with Objectivist semantics. A theory of meaning is a theory of understanding, and understanding is the totality of the ways in which we experience and make sense of our world in an ever-evolving process. Understanding is not achieved merely by entertaining and reflecting on sentential/propositional structure alone.” [Johnson 1989bb: 116]

⁶Cf. section 3.2.

or a symbol to be meaningful (to ‘have meaning’) always presupposes some being or beings for whom the event or symbol is meaningful, by virtue of its relation to something beyond itself. How that mental event or symbol gets its relatedness will depend upon the understanding in which it is embedded.” [id.: 177] This first step shows us that meaning-intentions point beyond (expressed) propositions as the only instance of the ‘meaning of’, whereas – contra Husserl – they do not necessarily point beyond intentionality as a mere transmitter or fulfiller of universal, a priori sources of meaning. Instead, as a second step, the significance of the ‘meaning for’ and the appropriate richness of the ‘meaning of’ indicate that meaning structures are generated by the interaction of the two, i.e. by the inseparableness of human understanding and reality, of which language is only one possible yet informative outcome.

Unlike the role devoted to the mind in the conceptual-propositional stance, human understanding is not “limited to understanding conditions of truth and falsity.” [Johnson et al. 1980: 199] It is rather our bodily being in the world that generates meaning, not our disembodied grasping of meanings as Platonic, pre-existing ideas. For this reason and in contrast to the ‘conceptual-propositional theory of meaning’, Johnson calls his own cognitive-linguistic stance the ‘embodied theory of meaning’. Instead of coming ‘top-down’ from an a priori realm of pure meanings the structure of which magically conforms to the structure of the world, meanings “emerge ‘from the bottom up’ through increasingly complex levels of organic activity; they are not the constructions of a disembodied mind.” [Johnson 2007b: 10] It is therefore impossible for Johnson to defend a Cartesian dualism that jams an ontological wedge between the intentional, understanding mind of the ‘meaning for’ and the external world as the ultimate and objective measure of truthful propositions. In lieu thereof, ‘meaning for’ and ‘meaning of’ are, as it were, two interconnected sides of the same meaning coin. For any comprehensive ontological approach towards PWO that takes into consideration the meaningfulness of part-whole relations, some details of this dichotomy’s annulment cannot be omitted.

Before I come to that, however, a few words about the relation of the present project’s methods and the definitions of meaning just discussed are expedient. In order to determine the ontological nature of PWO, I argued in chapter 1 for the need for two different methods: a deductive one consisting of a priori conceptual analysis and an inductive one consisting of both ordinary language analysis and empirical experiments. These two methods can now be related to the two stances concerning the notion of meaning. The conceptual-propositional stance towards meaning, being no more than a linguistically expressible truth bearer for something existing in the external world that makes the bearer in question true, is closely related to the deductive method. One central assumption of the deductive method for ontological research was the correspondence of reality and rationality: *adaequatio rei et intellectus*. The conceptual-propositional stance as described by Johnson and as we have become acquainted with it in Husserl’s 3rd and 4th LI builds on this correspondence theory of truth. With our propositional thoughts and formalized language, we are supposed to strike the chord of objective reality, which in turn makes a proposition meaningful. Given the assumed structural equivalence of laws of thinking and laws of reality, it is not even necessary to verify the propositional content of the former with the data provided by the latter.

The discovery of the a priori laws of logic (or, in Husserl, the a priori laws that make the laws of logic possible⁷) can be a priorily deduced from irreducible axioms with a set of predefined

⁷“These laws, which govern the sphere of complex meanings, and whose role it is to divide sense from nonsense,

procedures. No perception, no feelings, no body, no interpersonal communication or reference to culturally changing points of view are appropriate conditions for the meaningfulness of propositional contents. Meaning is neither *in* the ‘objective’ world nor *in* the ‘subjective’ act of meaning-intention, but prevails in a priori propositions and their symbolic expressions *about* the world. Conceptual-propositional meaning is thus deducible from a priori laws, and this is what binds this conception of meaning to the deductive method. This method is essential, because only through it were we able to arrive at conceptualizations of parts (moments as well as pieces), wholes (independent as well as dependent), and finally also of PWO as something that happens beyond the scope of this method. Therefore, the limitation of meaning to propositional meaning does not disqualify it automatically, only because it became clear at the end of the second chapter that PWO is not to be found in eternal, a priori laws of logic. Consequently, if language is supposed to be the only possible expression of propositional meaning and if propositions are supposed to be the only bearer of meaning (the only ‘meaning of’), then PWO would simply be meaningless, as it has no a priori, purely conceptual foundation. If we give credence only to the notion of meaning that is acceptable for the deductive method and its propositional-conceptual stance, then we would have reached an obvious end of this investigation into PWO’s ontological nature, because it would imply that even the quest for the ontological nature of PWO is meaningless. How can it be meaningful to strive for the determination of a potential ontological category of which we know beforehand that it is meaningless due to the fact that it is conceptually absent, thus unthinkable, thus – *adaequatio rei et intellectus* – unreal?

The partly linguistic, partly philosophical approach of Johnson, however, is as promising as it is methodically suboptimal, as it cannot do justice to the rich notion of experienced meaning it draws upon. First and foremost, it is promising, because on the one hand, he does not discard the method of deductive conceptual analysis, which has been undeniably fruitful for our first inspection of what we can conceptually *think of* when we think of parts, wholes and PWO. This is because, on the other hand, he embeds this deductive method, together with its narrow scope of meaning, in a much broader framework in which it becomes clear that propositional meaning is actually just a fraction of what meaning adheres to, both as ‘meaning for’ and ‘meaning of’. If we only analyze concepts and propositions and compare them with the external world in order to determine meaning in terms of truth or falsity, then we ignore not only all of the other areas in which meaning occurs to us. We also ignore the possibility that propositional meaning could be deeply connected with these other areas. What are these ‘other areas’ that are equally meaningful for us? For Johnson, everything – e.g. “things, people, situations, and relationships” [Johnson 2007b: 69] can be meaningful as long as it “stands forth qualitatively” [id.] in the world.

Why is it that language is meaningful for us, why does it sometimes make sense to us and sometimes not? Because language, both formal language and the natural languages in which we daily communicate, shares some basic structures of meaningfulness with other, non-linguistic phenomena. These structures are pre-propositional and they emerge through the experience of a certain kind of quality. “The problem with qualities is that they are about how something shows itself to us, about how something *feels* to us, and they seem to involve more than can

are not yet the so-called laws of logic in the pregnant sense of this term: they provide pure logic with the *possible meaning forms*, i.e. the *a priori* forms of complex meanings significant as wholes, whose ‘formal’ truth or ‘objectivity’ then depends on these pregnantly described ‘logical laws’.” [Husserl 2001: 49]

be structurally discriminated by concepts. Qualities are not reducible to the abstractions by which we try to distinguish them. Consequently, to the extent that philosophers of mind and language focus only on conceptual and propositional structures and the inferences supported by those structures, they lack an adequate way to investigate the role of qualities in meaning and thought.” [id.: 70] We will see shortly how in Johnson’s framework language is based on bodily experience, which is itself an experience of this kind of quality. In the description of these qualities, Johnson refers to J. Dewey who calls them ‘pervasive’ or – in reference to J. Locke – ‘tertiary’ qualities.⁸

It is important to notice not only the promising, but also the somehow problematic shift that is going on in Johnson’s characterization of meaning. Firstly, Johnson declares conceptual-propositional meaning as insufficient for a complete account of meaning. Conceptual-propositional meaning presupposes an external world, the objects in which exist independently of any observer. The attributes of these objects are their primary qualities, because in the tradition of Locke, only this kind of quality is subject-independent.⁹ If we do not want to actively include the perceiving or in any other way experiencing subject as a constitutive factor, then an (expressed) proposition has to aim at an object’s primary qualities, as only they are supposed to be attributable to an object in itself. Truth and falsity are only attributable to propositions about the factual nature of an object. This conceptual-propositional stance and the deductive method it entails has to presuppose the separation of the subject, whose propositions are or are not meaningful, and the objective world, which makes or does not make the proposition true. As we have seen, Johnson does not uncouple meaning from propositions about primary qualities, but he embeds this notion of meaning in a much more embracing characterization of meaning on which also linguistic meaning relies: meaning as a tertiary quality. Tertiary qualities “*are not properties of objects*. Instead, entire situations are characterized by pervasive qualities, and we pick out particular qualities [such as primary ones, M.S.] for discrimination within this unified situational whole.” [id.: 72] In such a situational whole, which is the ‘meaning of’, there is no distinction between the observing subject and the observed object. These two poles are nothing more than abstractions at a later, post-experiential stage. For this reason, Johnson agitates against the ontological separation of subject and world, which we will discuss in the next section.

Secondly, however, the method with which he agitates against this separation is suboptimal, because he uses a downright empirical-inductive method in order to disclose a more-than-empirical notion of meaning. The problem commences with the following: In his rich determination of meaning as belonging to tertiary qualities, Johnson not only incorporates meaningful propositions about primary qualities, but also meaningful perceptions of secondary qualities. We can describe secondary qualities as the empirical attributes of an object that we can perceive with our sense organs (whether or not these attributes exist only in the subject’s perception of them). For Johnson, the experience of meaning transcends even this domain of secondary qualities, which becomes clear in an exemplary depiction:

“When I look out my office window, I have the gift of experiencing an oak tree, massive almost beyond imagination, whose branches overwhelm my entire visual

⁸Cf. Johnson [2007b: 71].

⁹Cf. on the distinction between primary and secondary qualities Locke [1975: 117], Nolan [2011] and Ayers [2011].

expanse. In spring and summer, I see virtually nothing but literally hundreds of branches covered in an explosion of leaves, through which I occasionally glimpse a campus sidewalk flanked by grass, with students hustling along to classes or strolling hand in hand. In this moment there is only the situation, not as a mere visual scene, but as an experience with a pervasive unifying quality that is at once visual, auditory, tactile, social, and cultural. The pervasive quality changes as the day changes, and it changes also from day to day and season to season.” [id.]

What makes this situation meaningful for Johnson and representative for any person with similarly holistic experiences? The meaningfulness involved here neither consists in the appropriateness of propositional statements referring to it (conceptual-propositional meaning), because firstly the meaning seems to exist prior to the statement telling about it. Secondly, the ‘meaning of’, i.e. the quality of the situation, is not a stable object but an ever-changing complex of entities. Thirdly, the language that is required to describe this situation naturally draws on metaphors to complement the literal sense, which becomes even clearer in the many poems Johnson cites to show the qualitative richness of the ‘meaning of’.¹⁰ This is also a first hint about the significance of metaphors in Johnson’s analysis of ordinary language and the inferences he draws.¹¹ Nor does the meaningfulness of this situation lie in the empirical perception of objects or groups thereof, e.g. the smell of green leaves, the size of the high tree with leaves, the hustling of moving students, or one pair of students. What we can call ‘perceptual meaning’ that refers to the perceptible attributes of an object and that likewise presupposes a dichotomy between the perceiver and the perceived is exceeded by an experience that is intrinsically tied to the ‘meaning of’, because the ‘meaning for’ partakes in it as a situational component. There is no meaning in this ‘embodied theory of meaning’ if either the ‘meaning of’ or the ‘meaning for’ is cut off,¹² notwithstanding the rather distanced position Johnson takes in his example as an observer who sees the campus through his window. He himself, as a ‘meaning for’, is an essential part of the overall quality, which makes him experience himself as a part of the ‘meaning of’ as well. The idea that he is actually ‘just’ seeing or hearing the outside world as a passive observer may come only afterward as an abstraction from the holistic experience.

Whereas the ‘meaning for’ in the conceptual-propositional stance can be downplayed because the subject is generally ignored, and whereas the ‘meaning of’ in the perceptual sense of meaning is often downplayed because secondary qualities are said to exist only in the perceiving subject, both ‘meaning of’ and ‘meaning for’ are thus irreducible for meaning as consisting of tertiary qualities. Experience in this sense is experience of wholeness. In the epistemological order of

¹⁰“It is frustrating, therefore, that we have almost no adequate way to describe and explain what qualities are or how they shape our lives. Phenomenology sought to remedy this grave defect by taking as its chief task the articulation of the character of so-called lived experience. But even phenomenology has a hard time with the qualitative dimension, for it is easier to describe the *structural* aspects of experience than it is to describe felt qualities. The tendency is thus always to look for the constituting structures of experience, at the expense of the actual experience of qualities. After all, what can you possibly *say* philosophically about the quality of a red wheelbarrow covered with rain? ‘so much depends / upon // a red wheel / barrow // glazed with rain / water // beside the white / chickens.’ [*The Red Wheelbarrow* by William Carlos Williams, M.S.]” [Johnson 2007b: 70–1]

¹¹Cf. section 4.2.

¹²“Meaning comes, not just from ‘internal’ structures of the organism (the ‘subject’), nor solely from ‘external’ inputs (the ‘objects’), but rather from recurring patterns of engagement between organism and environment.” [Johnson et al. 2002: 248]

experience, this wholeness comes first. By drawing on Dewey's article 'Qualitative Thought', Johnson states that it "is not wrong to say that we experience objects, properties, and relations, but it *is* wrong to say that these are primary in experience. What *are* primary in experience are pervasive [i.e. tertiary, M.S.] qualities of situations, within which we subsequently discriminate objects, properties, and relations." [id.: 75] Metaphorically saying that these three kinds of meaning are layers now allows us to frame the experiential-situational meaning as being the most embracing in the epistemological order, followed by the perceptual layer, which again includes the conceptual-propositional layer.

meaning_{sit}: The meaning of a situation of any sort (e.g. aesthetic, emotional, social, natural, spiritual) in which the 'meaning for' and the 'meaning of' are intertwined but not reducible to one another. This situation consists of tertiary, 'felt' or 'pervasive' qualities that entail secondary and primary ones at subsequent phases of abstraction.

meaning_{perc}: The meaning of sense data that refer to a perceptible object whereby the 'meaning of' is usually reducible to the 'meaning for' and its physiological and neurological nature (e.g. John sees the brownness of a horse. Thereby the perceived brownness is not a property of the horse itself, but is reducible to the bodily act of seeing and the neurological processes belonging to it). Percepts consist of secondary, empirical qualities.

meaning_{prop}: The meaning of a (expressed) proposition that is either true or false, because it does or does not correspond with a matter of fact in the external world. Thereby the 'meaning for' is usually reducible to the 'meaning of', because the propositional content supersedes the subjective act of meaning-intention, making the latter an epiphenomenon and, as such, devoid of any surplus compared to the former. Ideally, propositions refer to an object's primary qualities, such as its material and physical nature, and are derived by a priori acts of conceptual analysis and deductive reasoning.

After having formulated these characterizations of the three kinds of meaning¹³ that are relevant for PWO as well, I would like to mention why I find Johnson's method – although I will follow it until the end of this chapter – rather suboptimal, given his own account of meaning as meaning_{sit}. It became clear in chapter 2 that PWO does not have meaning as meaning_{prop}, because this notion is a priori contradictory, inconsistent and too dynamic to grasp with

¹³What I just termed 'meaning_{sit}' and 'meaning_{perc}' can be set alongside Škilters' [2011: 278] definition of meaning, according to which "[m]eaning is a perceptually and bodily grounded non-linguistic cognitive structure with a situation-foundation (including the factors from the concrete situation of the meaning assignment) and an experience-foundation (including variety of experiential, subjective, bodily grounded, background knowledge aspects of the agent). In assigning meaning to something – visual or verbal or other stimuli – we are merging both kinds of resources together to generate coherent semantics of the respective stimuli [...]" I think that the best way to relate this definition to the distinction I am advocating is to subsume both the situation-foundation and the experience-foundation of this definition under the term 'meaning_{sit}', whereby this term should be defined more broadly, which is, however, not necessary for conducting the present project. The merging of these foundations, together with the connection it undergoes with perceptible stimuli, would then result in what I call 'meaning_{perc}'. Here as elsewhere, however, the transitions are gradual and often impossible to demarcate analytically.

stable concepts. However, Husserl himself points out that the process which I call ‘PWO’ may be a meaningful notion when we look at empirical perception, which he *expressis verbis* refuses due to his preference for a formal, non-material ontology and the deductive method required for it to study the basic structures of reality. However, we will see in the course of the present chapter that Johnson’s empirical analysis of natural language is instructive regarding the experiential nature of PWO, that is to say about its meaning_{perc} as far as we can elucidate it by looking at and inferring from ordinary judgments. But does Johnson not have a higher aim, namely the elucidation of meaning_{sit} in order to explain the qualitative richness of lived experience? He indeed seems to have this aim and I absolutely agree with him regarding the significance of tertiary qualities.

The problem is, however, that while Johnson’s intentions target the level of tertiary qualities, the methods he draws on are more suitable for disclosing the empirical nature of meaning, including the abstractness of meaning_{prop} as resulting from and being entailed by meaning_{perc}. This is because, as a cognitive linguist, Johnson’s research methods, particularly the investigation into ordinary language that he conducts in most of his works, is downright empirical, which he even proclaims several times throughout his publications. To be precise, while the experience of meaning takes meaning to be a tertiary quality, both the origins of meaning in body-environment interactions *and* the principal way we can get informative access to this origin by looking at ordinary language is explicitly empirical. As Johnson writes, an “embodied view of meaning looks for the origins and structures of meaning in the organic activities of embodied creatures in interaction with their changing environments. It sees meaning and all our higher functions [thus meaning_{prop+perc+sit}, M.S.] as growing out of and shaped by our abilities to perceive things, manipulate objects, move our bodies in space, and evaluate our situation.” [id. 11] Thus even the origin of meaning_{sit}, not only the origin of meaning_{prop}, is supposed to lie in the empirical realm of meaning_{perc}. It is no surprise that this empirical realm can be studied best with empirical methods. To do so, Johnson often refers to studies of neuroscience, because although “the brain alone cannot give us meaning, it is surely the supreme bodily organ in the construction of meaning.” [id.: 155] He generally argues in favor of an “empirically responsible philosophy [that] would require our culture to abandon some of its deepest philosophical assumptions.” [Johnson et al. 1999: 3] Such an empirically responsible philosophy consists in a sort of “cognitive science of philosophy [that] can [...] apply the conceptual tools, methods, and results of the cognitive sciences to help us understand the nature and to assess the adequacy of philosophical theories.” [id.: 340]¹⁴

The essential contribution by Johnson himself to this empirically responsible philosophy lies in the analysis of natural language and philosophical theories in order to show that and how many expressions we use or statements we make, including the corresponding concepts of meaning_{prop}, are actually metaphorical in nature. They rely on perceptual-bodily experiences and the structural patterns (called ‘image schemata’¹⁵) that are produced by body-environment interactions. “We view issues having to do with meaning in natural language and with the way people understand both their language and their experiences as empirical issues rather than matters of a priori philosophical assumptions and argumentation.” [Johnson et al. 1980: 210] But we may rightly doubt whether what people find meaningful in their lives, their acts of sense-

¹⁴Cf. on the notion of an ‘empirically responsible philosophy’ also Johnson et al. [2002: 262].

¹⁵Cf. section 5.1.

making as sense-feeling, their capacity of being a ‘meaning_{sit}-for’ by experiencing the infinitely rich scope of ‘meaning_{sit}-of’, can be explained, let alone described, by empirical methods alone. Such methods, even when they are presented as an “empirical phenomenology” [Johnson 1987: xxxvii] to give some credit to the description of human experience, can themselves only be meaningful when they attempt to explain meaning_{perc} and/or undermine meaning_{prop}, because empirical methods necessarily draw on inductive generalizations which cannot do justice to the singularity of felt sense. Of course, because he wants to demonstrate “the intimate connections between perceptual and semantic structures” [Johnson 1989bb: 111], Johnson’s main target is the objectivism of meaning_{prop}. Since Johnson’s analyses of ordinary language will prove to be significant for PWO and since the meaningfulness of PWO is specifically not identifiable by the deductive method against which Johnson argues, his empirical approach is indeed useful for my own investigation. But due to the restrictions of his method, we cannot expect to arrive at insights into the experiential nature of PWO as meaning_{sit} within the methodological framework of Johnson and cognitive linguistics in general. The inductive method à la Johnson is as little able to arrive at the ambitious aim of elucidating meaning_{sit} as the deductive method of conceptual analysis is able to surmount meaning as meaning_{perc}. Although Johnson’s empirical method cannot keep up with his much more embracing notion of meaning_{sit}, the cognitive linguistic approach of Johnson and others does endow us with the following fundamental insight: The process of PWO is an embodied and hence ‘really’ existing aspect of reality that expresses itself, among others, in ordinary language and abstract thinking.

4.1.2 No Meaningfulness Without a Mind/Body/World Unity

There are thus two distinguishable perspectives in Johnson’s framework of cognitive linguistics. The first perspective comprises the meaningfulness of lived experience, including the experience of the body and its senses as being our connectives to the world around us, in short, embodied meaning or MEANING_{SIT}. The second perspective consists of the methods with which MEANING_{SIT} is supposed to be explicable. Unlike the experience of embodied meaning, which necessitates a certain kind of being aware of the experience (otherwise it would not be a direct experience, but at most a passive perception of sense data or a belated reflection on a previous experiential state), the empirical methods are supposed to shed light on the unconscious structures with which we are able to be a ‘meaning for’ at all. Whereas the first perspective can draw on phenomenological descriptions of ‘what it feels like to experience qualities or a situation as meaningful’, the second perspective regards phenomenology to be insufficient and instead refers to our ‘cognitive unconscious’ via empirical methods.¹⁶ For example, when we actually feel an emotion in the sense of being aware of it and the situation in which this emotion occurs, then we are already beyond the unconscious state in which the emotion in question turned out to

¹⁶“There is much to be said for traditional philosophical reflection [i.e. conceptual analysis of MEANING_{PROP}, M.S.] and phenomenological analysis [i.e. describing MEANING_{SIT}, M.S.]. They can make us aware of many aspects of consciousness and, to a limited extent, can enlarge our capacities for conscious awareness. Phenomenological reflection even allows us to examine many of the background prereflective structures that lie beneath our conscious experience. But neither method can adequately explore the cognitive unconscious – the realm of thought that is completely and irrevocably inaccessible to direct conscious introspection. It is this realm that is the primary focus of cognitive science, which allows us to theorize about the cognitive unconscious on the basis of evidence. Cognitive science, however, does not allow us direct access to what the cognitive unconscious is doing as it is doing it.” [Johnson et al. 1999: 12]

be meaningful on a pre-reflective level.¹⁷ It is the elucidation of this pre-reflective level that the second perspective seeks with empirical means, while it is the description of the reflective level that Johnson thinks can be the field of phenomenological analysis. Phenomenology in Johnson's usage of the word, *nota bene*, does not refer to Husserl's method of transcendental reduction, but only to a "reflective interrogation of recurring patterns of our embodied experience." [Johnson 2005: 20]

Although both perspectives have to be distinguished, they are equally relevant for the determination of the ontological nature of PWO. Whereas the first perspective can tell us more about the meaning_{sit} of PWO, the second perspective can tell us something about the manifestations of PWO in ordinary language. From the latter we can draw conclusions concerning their embodied yet unconscious structures and the development of these structures. Another reason why both perspectives are significant is that by targeting the deductive method's presupposition of a disembodied faculty of reasoning about meaning_{prop}, the empirical approach of the second perspective does not content itself with meaning_{perc} as a research subject. It additionally aims at meaning_{sit} and thereby prepares for one of meaningful experience's major characteristics: the dissolution of mind/body and body/world dichotomies. Thus the second perspective methodically confirms what is consciously felt in the first perspective, which is actually not a separation of mind/body/world as it is often found in the deductive method, but a becoming aware of the inadequacy of such an assumption despite its obtruding and deceptive appearance. By methodically justifying that there is no such ontological separation, the empirical approach of cognitive linguistics provides a stepping stone from which a profound *and* justified experience of meaning as being one with the 'meaning of' is possible. It is the accentuation of the active role of the body and its interactions with its physical, cultural and social environment that makes the empirical method of Johnson conclude that even our minds and our understanding are embodied, while our bodies are part of the world, which consequently grounds the mind and makes it differ from the world only in a relative and functional, but not in an absolute sense.¹⁸

The renouncement of any absolute mind/body/world separation towards which the empirical method of Johnson works not only serves as the explanans for the experience of MEANING_{SIT} as explanandum: it also explains the origin of the three kinds of meaning I distinguished by arguing in favor of the meaning-creating role of the body's interaction with its environment in the widest *and* closest sense. In Johnson's words, if "there is no disembodied mind – no

¹⁷"Another way of putting this central point is that by the time we feel an emotion, a mostly unconscious assessment has occurred of the situation we find ourselves in, and in cases where we are functioning optimally, we have frequently already taken steps to transform the situation in order to restore homeostasis and enrich the quality of our experience. We have *perceived and understood* our situation in a certain light, although with little or no conscious reflection. This is a way of saying that our world (our situation) stands forth meaningfully to us at every waking instant, due primarily to processes of emotion and feeling over which we have little control. *And yet the situation is meaningful to us in the most important, primordial, and basic way that it can be meaningful - it shapes the basic contours of our experience. The situation specifies what will be significant to us and what objects, events, and persons mean to us at a pre-reflective level.*" [Johnson 2007a: 66]

¹⁸"A person is not a mind *and* a body. There are not two 'things' somehow mysteriously yoked together. What we call a 'person' is a certain kind of bodily organism that has a brain operating within its body, a body that is continually interacting with aspects of its environments (material and social) in an ever-changing process of experience. [...] In short, 'mind' and 'body' are merely abstracted aspects of the flow of organism-environment interactions that constitutes what we call experience." [Johnson 2007a: 12]

transcendent soul or ego – to be the source of meaning, then what things are meaningful to us and how they are meaningful must be a result of the nature of our brains, our bodies, our environments, and our social interactions, institutions, and practices. [...] The core idea is that our experience of meaning is based, first, on our sensorimotor experience, our feelings, and our visceral connections to our world; and, second, on various imaginative capacities for using sensorimotor processes to understand abstract concepts.” [Johnson 2007b: 12] But granted that the empirical research of the cognitive sciences is able to explain the interwovenness and the thus originating meaning through the interactions of mind/body/world, there still remains a mutual asymmetry between the methodology for and the actual experience of meaning_{sit}. Both aspects include more than the other is able to cover. In exploring what Johnson calls the ‘cognitive unconscious’, i.e. the “‘hidden hand’ that shapes how we conceptualize all aspects of our experience” [Johnson et al. 1999: 13], the empirical methods’ explanatory approaches try to dig deep into the iceberg of the ‘meaning for’, thereby going beyond the experiential *quidditas* as the what-is-it-likeness of direct meaning-experience. Therefore, the experience of MEANING_{sit}, including the perception of meaning_{perc} and the rational character of meaning_{prop}, also withdraws itself from being fully covered by empirical methods. This is because such methods may *explain* the embodied nature of meaning and the fallaciousness of mind/body/world dichotomies, but they cannot *capture* or reproduce the experiential sense of meaning_{sit}.

For this reason, it is partly understandable why Johnson has been reproached for being an extreme empiricist.¹⁹ If you only consider his method and his frequent accentuations of the significance of empirical research against speculative and/or deductive armchair reasoning, such a remark may be understandable. However, in his response to this reproach, he states that “[w]e do not, and never have, espoused any form of empiricism at all, extreme or otherwise. [...] We have pointed out [...] that the empirical findings we were reporting do not fit either rationalism or empiricism, and we proposed a third alternative that did not require the dichotomy. We called it *experientialism* and later described it [...] as an *embodied realism*.” [Johnson et al. 2002: 247–8] Thus Johnson draws on empirical findings in order to show that he is not an empiricist. This may sound less paradoxical if we consider the difference between method and the experientialism or embodied realism of meaning_{sit} that the method attempts to explain. While we, as ‘meaning for’, are grounded in the ‘meaning of’ that is our bodies’ and brains’ ongoing interactions with the world, we can only empirically approach these interactions from the outside and conclude from there about the trans-empirical, both rational (meaning_{prop}) and experiential (meaning_{sit}) nature of our understanding that is happening on the inside. In other words, as a third-person method, ‘embodied realism’ and similar approaches of cognitive science account for the proof of what is already taken for granted in the awareness of our first-person point of experience, namely that “we are always ‘in touch’ with our world through our embodied acts and experiences.” [id.: 249] The use of empirical methods alone does not have to make you an empiricist qua subject matter, although it is another question whether the subject matter can be fully captured by empirical methods alone if it is supposed to be trans-empirical in nature.

The intrinsic tension of Johnson’s cognitive linguist approach seems to prevail in the unbridgeable gap that looms between the explanans and the explanandum. Even if there are “at least nine types of empirical evidence for a view of embodied meaning” [id.: 250], there still

¹⁹Cf. Rakova [2002: 218].

remains a desideratum no empirical evidence can fulfill, because precisely in being empirical, it scrapes past what it wants to make evident. The benefit of Johnson's approach is that this intrinsic tension is not implicit, but openly and self-critically discussed. With regard to image schemata, which are what Johnson takes to be the major kind of unconscious structures that interconnect mind, body and world²⁰, he states the following:

"I still cannot shake off the nagging sense that the limitations of our exclusively structural analysis of image schemata leave out something of great importance. Conscious life is very much an affair of felt qualities of situations. The human experience of meaning concerns *both* structure *and* quality. However, beyond phenomenological description, there appear to be no philosophical or scientific ways to talk adequately about the fundamental role of quality in *what* is meaningful and *how* things are meaningful. We can name the qualities, but we cannot even describe them adequately. When we describe the image-schematic structure alone, we never capture fully the qualities that are the flesh and blood of our experience." [Johnson 2005: 28]

The application of empirical methods allows us to conclude (or to hypothesize?) that there are certain structures with which we experience meaning in all of its depth and variety and why and how these structures are supposed to emerge due to the ontological inseparability and interactivity of mind/body/world. However, what it means to experience meaning and to experience this inseparability and this interactivity is a twilight zone that is inaccessible for any empirical method alone. This is why, both despite *and* thanks to his rich notion of meaning as meaning_{sit}, I prefer to take Johnson's approach as an empirical (not empiricist), i.e. inductive, method with which first and foremost the empirical domain of PWO, as it occurs in natural language, can be explained. To aim higher than one is able to reach is the best condition for finding a more appropriate position from which the research object can be focused on anew. But for now, let us see how, as discussed in 1.3.1, the semantic dimension of ordinary language can help us to partly react to the *quaestio iuris* of meta-ontology, which here means to justify the a priori inference of PWO that pointed beyond Husserl's formal ontology into the empirical realm.²¹

It is hard to argue that ordinary language and linguistic meaning can tell us something about the fundamental structures and categories of the world and thus provide us with ontological insights if they are taken to be autonomous domains. Only under the premise of their not being connected to or embedded in bodily, material, and sociocultural contexts is it justified to neglect ordinary language due to its alleged vagueness, contingency and inconsistency for ontological research. The consequences would be to either remain exclusively within the domain of language as one ontological region among others and to iron out the equivocality of natural language by means of logical analysis, and/or to hypothesize an analogousness between language and world, such that linguistic meaning consists in semantically true statements about matters of worldly affairs. The first option, however, is too limited, because at most it can do no more than draw conclusions about the (onto-)logical nature of language alone, whereby then 'logical' and 'ontological' are dubiously treated as synonyms. The second option is hardly defensible if

²⁰Cf. section 5.1.

²¹Cf. subsection 2.2.7 and section 2.3.

the ontologist does not make it their business to find a convincing nexus between language and world but refers to their godlike vantage point instead. The philosophical doubtfulness of such a God's eye view and the psychological doubtfulness of the philosophizing 'God' who raises a claim on it makes the quest for a nexus between language and world even more urgent. It is only via such a nexus, as a concrete and accessible *tertium comparationis*, that we can draw inferences from language to world and vice versa.

For Johnson, this nexus is, in the first instance, the human body in all of its physiological and neurological aspects. Although there are important sociocultural differences in how we conceptualize our body, it is undeniable that every person, including every person engaged in the act of philosophizing,²² experiences the world and its richness of meanings via his or her body. At the same time, provided that there is empirical evidence for it, abstract concepts and their linguistic counterparts are also grounded in bodily structures. We can say that the body, which always includes the embodied mind, is the necessary 'meaning for' for any form of meaning, such that three biconditional arrows point from the body to the domains of 'meaning_{prop} of',²³ 'meaning_{perc} of',²⁴ and 'meaning_{sit} of'.²⁵ Thus the inferences we draw from ordinary language regarding the nature of the experienceable world must also primarily be directed to the body as a 'node' from which and only from which both linguistic meaning and the qualities of the experienceable world can be woven out. Johnson describes this point of view concisely in the following quote:

"The contours and structures of our bodily (sensorimotor) experience of our world influence our understanding of the most abstract, nonphysical domains, principally by means of metaphoric projections based on image-schematic structure. Our 'bodily' understanding and our 'conceptual' or 'propositional' understanding are thus intimately related. Linguistic meaning does not exist as an independent entity generated by some language module in our cognitive apparatus. Instead, it is a specification of our general capacity to experience our world, and aspects of it, as meaningful, given the nature of our bodies, our purposes, our goals and our values. What we perceive as meaningful within our environmental context is very much the basis for what can be meaningful for us at the level of language. And language, in turn, adds even more possibilities for the articulation of meaning, and thereby for

²²Johnson repeatedly reminds his readers that philosophers are as human as any other persons are. They have a body, culturally and socially influenced perspectives, a restricted knowledge of natural languages, and they certainly are not born as philosophers who are mysteriously called to make more valid truth-claims than other persons. As philosophers themselves, like many scientists, mostly do not thematize their very own embodiedness and historicity, Johnson regards it as one of the tasks of cognitive science to explicitly put philosophers on the same cognitive level as all other human beings. "When philosophers construct their theories of being, knowledge, mind, and morality, they employ the very same conceptual resources and the same basic conceptual system shared by ordinary people in their culture. Philosophical theories may refine and transform some of these basic concepts, making the ideas consistent, seeing new connections and drawing out novel implications, but they work with the conceptual materials available to them within their particular historical context." [Johnson et al. 1999: 338]

²³If, and only if, there are bodily structures as 'meaning for', there can be meaningful propositions as 'meaning of'.

²⁴If, and only if, there are bodily structures as 'meaning for', there can be meaningful sense data as 'meaning of'.

²⁵If, and only if, there are bodily structures as 'meaning for', there can be meaningful situations as 'meaning of'.

a richer experience of our world.” [Johnson1989b: 117]

This quote comprises Johnson’s theory in a nutshell. One of the most important assertions that comes to the foreground here is that linguistic meaning relies on more comprehensive layers of meaning. Much of the semantic structure of language, taken as an expression of ‘the most abstract, nonphysical domains’ of our conceptual apparatus, is but a reflection or ‘projection’ of more basic structures of meaning. The act of this projection consists in the activation and *mapping* of certain mostly unconscious, spatial ‘image-schematic structures’, which our bodies have incorporated via body-environment interactions, *into* domains that are seemingly disembodied, such as the abstract domains of concepts and language. Not only the basis of this projection (our bodily schemata, our direct experiences) is often unconscious, but also the act of projecting itself. This is why conceptual and linguistic domains often appear to us as purely a priori, independent systems that are literally mirroring the world but do not depend on the world or any other parameters in order to exist. Yet once we assume the interconnectedness and inseparability of mind, body and world and once we regard linguistic meaning as embedded in more comprehensive domains of meaning, we can inductively draw inferences from the ordinary and formal usages of language to the sources from which the acts of projection take place. It is only then that most of what appears to be literal in language is in fact mostly a metaphorical modification of a source domain that does not lie in language itself, but in pre-linguistic body-environment interactions. Thus “we first acquire the bodily and spatial understanding of concepts and later understand their metaphorical extensions in abstract concepts.” [Johnson et al. 2002: 253 f.]

The significance of the cognitive linguistic approach for the present project lies in the assumption that part-whole structures are responsible for some of the semantic aspects of a linguistic expression via a projection of embodied part-whole patterns into abstract, linguistically expressible concepts. “No matter how sophisticated our abstractions become, if they are to be meaningful to us, they must retain their intimate ties to our embodied modes of conceptualization and reasoning.” [Johnson 1999: 81] Thus in order to conduct preliminary determinations of PWO’s ontological nature, it seems advisable to follow Johnson and look at linguistic expressions containing part-whole relations. In so doing, the cognitive linguist approach serves, admittedly in an unorthodox fashion, both as a justification and as a method for ontological purposes. In particular, it supports the belief that the ways we communicate meaningfully with language such that our commonsensical demands for understanding each other through language are largely satisfied cannot be completely misleading when we want to discover and describe some of the fundamental structures of the reality we live in and we are part of. If language, mind, body and reality indeed hang as closely together as is claimed, then it is plausible that starting from the one end (language) can finally lead us to the other end (reality). Although the start again seems to lie at the ‘top’, it is actually, unlike in the deductive method, the ‘bottom’ (the environment, our bodies, image schemata, MEANING_{SIT}) in the sphere of which all higher notions should be fathomed. In this sense, the cognitive linguistic, i.e. inductive-empirical approach towards PWO is genuinely bottom-up and might therefore undercut its logical-conceptual *absence* at which we arrived in the course of the chapter 2.

4.2 On Conceptual Metaphors

Let us begin by figuring out whether or not PWO is identifiable as a conceptual metaphor. For Johnson and cognitive linguistics in general, metaphors are not just a linguistic, but a cognitive and therefore embodied phenomenon. For this reason, it is important to distinguish the traditional view of metaphors, which corresponds with what Johnson calls ‘objectivism’ and what I more specifically described as the ‘deductive method’ in the context of ontology, from the comparably novel stance of cognitive linguistics. Johnson states that the traditional view, by drawing on trivial notions of what metaphorical language is supposed to be, considers metaphors as a purely linguistic and more or less poetic trope.²⁶ In assuming that our concepts and propositions can and must directly match reality as such, our language has to literally denote objects and events in the real world. Metaphors are therefore traditionally held to be a deviant and relatively insignificant stylistic device.²⁷ Johnson dedicates a great deal of his work to arguing against such a narrow and almost deprecatory view of metaphors. For him, metaphors do not just appear in rhetorical language, but, as language is grounded in the structure of our body and minds, metaphors are deeply embedded in our conceptual apparatus and therefore depend on the ways in which we experience our environment with our body in the broadest sense.²⁸ Once we regard metaphors as conceptual and language as being mostly an expression of metaphorical concepts, then this notion of conceptual metaphors enables us to draw inferences from the linguistic to the conceptual domain in order to make valid hypotheses about the existence of basic cognitive patterns such as image schemata and from there – hopefully – about the ‘experienceability’ of the world.

What is a conceptual metaphor exactly? A conceptual metaphor basically consists of three components: (1) primary or literal metaphors, (2) complex or abstract metaphors, and (3) either conscious or – as is more often the case – unconscious acts of mapping or projecting the primary to the complex metaphor. While the primary metaphors are located in what can be called the ‘source domain’,²⁹ the complex metaphors are situated in the ‘target domain’. The act of mapping is basically a unidirectional projection from a primary metaphor of the source domain to a complex metaphor of the target domain:

$$\left(\underset{\text{source domain}}{\text{primary metaphor}} \xrightarrow[\text{mapping}]{\text{act of}} \underset{\text{target domain}}{\text{complex metaphor}} \right) \rightarrow \text{conceptual metaphor}$$

While the source domain originates or emerges from our bodily interactions with the environment, the target domain is the place in which abstract concepts and symbolic language, but also ordinary expressions of natural language prevail. “The most sweeping claim of conceptual metaphor theory is that what we call abstract concepts are defined by systematic mappings from body-based, sensorimotor source domains onto abstract target domains.” [Johnson 2007a: 177] Because the act of mapping is mostly unconscious, the elements of the target domain

²⁶Cf. Johnson [2010: 402].

²⁷Cf. Johnson et al. [1999: 120].

²⁸“But metaphor is not merely a matter of language. It is a matter of conceptual structure. And conceptual structure is not merely a matter of the intellect – it involves all the natural dimensions of our experience, including aspects of our sense experiences: color, shape, texture, sound, etc.” [Johnson et al. 1980: 235]

²⁹Cf. Croft [2003] for an introduction to the concept of ‘domain’ in cognitive linguistic research on conceptual metaphor and metonymy.

do not appear to be metaphorical results of projections from more basic, body-based conceptual metaphors. Instead, abstract concepts seem to be independent of bodily structures and experiences. This is what, according to Johnson, the lion's share of Western philosophy, in accordance with the ordinary misapprehension of the fundamental role of metaphors for cognition and experience, has failed to recognize.³⁰ Only when we disclose the metaphorical dimension of our abstract thinking and ordinary language are we able to attribute philosophical theories and theorems to the concrete, embodied human beings that philosophers undeniably are. But more generally, and more in line with my own research aim, by demonstrating the intimate relationships between primary and complex metaphors it is possible to empirically indicate how linguistic meaning conforms with more comprehensive layers of bodily and situational meaningfulness. Thus the ontology of PWO perhaps hinges on the decision to identify and classify this seemingly abstract yet logically inaccessible notion as a conceptual metaphor. To do so, it is advisable to inspect more closely the single components such a conceptual metaphor entails.

4.2.1 Primary Conceptual Metaphors

We stand up and sit down. We walk from one room to another. We hear and see. We sidestep other people when we walk on the street. We open an envelope and take out or put in a letter. We grasp a glass, drink some water from it and refill it. The simple fact that we constantly interact with our environment via our bodies is one of the two conditions that gives rise to primary metaphors. The other condition is that we also constantly make implicit judgments about these bodily interactions by relating them to more abstract domains. In other words, a “primary metaphor is based on an experiential correlation between a particular sensorimotor domain and some domain pertaining to a subjective experience or judgement.” [id.: 178] Thus we again have a division of domains, whereby what is the source domain for conceptual metaphors is subdivided into a sensorimotor domain and an experiential domain. In this case, however, the connection between the domains is bidirectional. This is because the sensorimotor domain determines and therefore restricts – due to bodily and physical limitations – what and how we can conceptualize what we experience, whereas the experiential domain is directed to the sensorimotor domain because it makes judgments about it:

$$(\text{sensorimotor domain} \overset{\text{determines}}{\underset{\text{evaluates}}{=}} \text{experiential domain}) \rightarrow \text{primary metaphor}$$

Primary metaphors are, for example, “AFFECTION IS WARMTH, IMPORTANT IS BIG, MORE IS UP/LESS IS DOWN, ORGANIZATION IS PHYSICAL STRUCTURE, HAPPY IS UP/SAD IS DOWN, STATES ARE LOCATIONS, CAUSES ARE FORCES, CAUSATION IS FORCED MOTION, PURPOSES ARE DESTINATIONS, TIME IS MOTION, CONTROL IS UP, KNOWING IS SEEING, HELP IS SUPPORT, DIFFICULTIES ARE BURDENS, CATEGORIES ARE CONTAINERS, and UNDERSTANDING

³⁰“I have argued that the single biggest reason that most traditional and contemporary philosophy cannot recognize the pervasive, theory-constituting role of metaphor in philosophy is the failure of philosophers to acknowledge the existence of deep systematic conceptual metaphor. They cannot recognize it because to do so would require a fairly substantial revision of some of the founding assumptions of their philosophies. It would require them to abandon some of their founding metaphorical conceptions in favor of other metaphors. If you acknowledge conceptual metaphor, then you have to give up literalism. If you give up literalism, you must abandon objectivist theories of knowledge. If you reject objectivist metaphysics and epistemology, you must abandon the classical correspondence theory of truth. Eventually, you will have to rethink even your most basic conception of what cognition consists in.” [Johnson 2008: 51]

IS SEEING.”³¹ [id.: 179] Of course, there are many more primary metaphors.³² The second place in these ‘*x* is *y*’ judgments represents the sensorimotor domain, in which we experience warmth, size, verticality, physical structure, motion, etc. Such experiences are omnipresent for our bodies and they create basic patterns from which we can interpret more abstract domains. More often than not our subjective judgments about them are internalized and learned from early childhood to such an extent that we are not aware of how our conceptualizations of, for example, affection or importance relies on our bodily experiences of warmth or size respectively. It is hypothesized that the correspondence between the sensorimotor domain and the experiential domain is taken to be a conflation of the two domains, which gradually produces stable neural connections in our brains. “The sensorimotor networks perform complex inferences; for example, if something shoots up, it moves upward rapidly and in a short time is much higher than before. Via the neural connections, the results of these inferences are ‘projected’ from the sensorimotor source network (verticality) to the subjective judgment target network (quantity).” [Johnson et al. 1999: 55] From such a correspondence of, in this case, physical verticality to experienced quantity, the primary metaphor MORE IS UP comes into existence. Ordinary linguistic statements like “The number of books printed each year keeps going *up*” [Johnson et al. 1980: 15] or ‘Steel prices rose’³³, for example, can then be traced back to the primary metaphor MORE IS UP.

The bidirectional correlation between the sensorimotor domain and the experiential domain is of philosophical importance. On the one hand, it prevents any relativistic misinterpretations of Johnson’s theory, while on the other hand, it allows for a certain imaginative freedom as well as sociocultural diversity in how the sensorimotor domain can be evaluated both within and beyond the cognitive unconscious in which primary metaphors normally arise and prevail. The fact that our bodily constitution, thus the sensorimotor domain, only allows for a certain range of metaphors anticipates the reproach that, according to Johnson’s theory, metaphors could be arbitrarily created and that it would be impossible to give a systematic, universally valid account of them. Johnson’s restriction of primary metaphors to body-environment interactions enables him to disclaim a certain Nietzschean position according to which concepts would only be arbitrarily chosen, solidified metaphors that actually have no direct grounding in reality.³⁴ As our bodies are part of the world and given the hypothetical condition that metaphors, i.e. among others our abstract concepts, are results of our bodily constitution, Johnson is able to state that there is instead a certain universality inherent to primary metaphors. “Inevitably, many primary metaphors are universal because everybody has basically the same kinds of bodies and brains and lives in basically the same kinds of environments, so far as the features

³¹To indicate their special status, Johnson writes conceptual metaphors (as well as image schemata) in capital letters. Since this has become the standard way of notation in cognitive linguistics, I will adopt this stylistic choice.

³²“Grady [1997, M.S.] hypothesizes that people will acquire hundreds, or even thousands, of primary conceptual metaphors just by going about the daily affairs of their lives. These metaphors are formed primarily because of the nature of our bodies (with their brains, sense organs, motor systems, and emotions) as they interact with our environments. We cannot avoid acquiring these metaphors, because the experiential correlations (and hence neural co-activations) on which they are based constitute large parts of our mundane experience.” [Johnson 2007a: 178]

³³“When steel sellers are charging more for their steel, the situation is conceptualized and spoken of in terms of a spatial rise. But there need be no entity that is rising in space.” [Johnson et al. 1980: 263]

³⁴Cf. Nietzsche’s [1988] proclamatory essay ‘Über Wahrheit und Lüge im außermoralischen Sinne’.

relevant to metaphor are concerned.” [id.: 257] However, what will become even more apparent when we turn to the case of complex metaphors, is that the rather contingent nature of the experiential domain prevents any universality according to which every body and every culture would have to have the same conceptual metaphors only because the nature of our bodies is quite similar. Instead, the particular states within the experiential domain are “experientially basic because they characterize structured wholes within recurrent human experiences.” [id.: 117]

Human experiences are not just experiences of and via the body. They are also experiences of and via cultural, social or religious settings in the broadest sense. These additional contexts have an effect on the *evaluation* of the sensorimotor domain. Likewise, within the restrictions but beyond the conventionalized metaphors of the sensorimotor domain, we can create new meanings, thus novel primary metaphors. This is done when we actively (re-)evaluate the sensorimotor domain from the perspective of the experiential domain and consequently find appropriate linguistic expressions for it. Faithful to his denial of any ontological gap between mind/body/world, Johnson even goes so far as to claim that via the creation of novel metaphors, we create new realities. “New metaphors have the power to create a new reality. This can begin to happen when we start to comprehend our experience in terms of a metaphor, and it becomes a deeper reality when we begin to act in terms of it. If a new metaphor enters the conceptual system that we base our actions on, it will alter that conceptual system and the perceptions and actions that the system gives rise to. Much of cultural change arises from the introduction of new metaphorical concepts and the loss of old ones. For example, the Westernization of cultures throughout the world is partly a matter of introducing the TIME IS MONEY metaphor into those cultures.” [id.: 145] In short, the bidirectional correspondence between the sensorimotor and the experiential domain of primary metaphors is philosophically important. It ensures a maximum of socialcultural variety and creative freedom (which is ultimately an ontological freedom due to the fundamental mind/body/world inseparability) and accounts for a minimum of arbitrariness when it comes to the most basic level of our bodily being in the world. The correspondence in question could thus be understood as a regulative that filters out strong versions of objectivism and relativism alike.³⁵

Both the sensorimotor domain and the experiential domain are again subdividable. As we have seen, the sensorimotor domain is what connects our bodies to the spatio-temporal environment in the widest sense. In interacting with this environment, we adopt certain basic patterns of it, like size, distance, verticality and horizontality, paths and goals, containers and also – important for the present investigation – parts and wholes. Such patterns are mostly spatial and topological in nature. They are called ‘image schemata’ and I will discuss them in more detail in section 5.1. Because image schemata belong to the sensorimotor domain, they are taken to be universal and ‘real’ in the sense that they account for the “ontological continuity [which] is the coupling (the interactive coordination) of an organism (here, a human one) and its environment. Recurrent, adaptive patterns of organism-environment interaction are the basis for our ability to survive and to flourish. They are also the ground of meaning.” [Johnson 2007b: 136]. This is what makes the sensorimotor domain, subdivided into body-environment interactions and the resulting image schemata, so important for any ontological reading of

³⁵Cf. Yu [2008] on the relationship between bodily universality and cultural-experiential contingency in cognitive linguistics.

Johnson and cognitive linguistics in general. Starting with what seems to be the most abstract and complex concepts, expressed in ordinary and philosophical language, we can reach down via the experiential domain of meaning, via primary metaphors and then via image schematic patterns into the most basic and comprehensive structures of the world in which and for which we are sensing and understanding organisms. It seems that in this theory, due to the ontological continuity, there is no Kantian *An sich* (although the experiential domain constantly influences the ways in which reality presents itself to us). We just have to follow the chain of inductive inferences from empirical studies of language down into the cognitive unconscious and from there even ‘deeper’ into a plausible yet unavoidably hypothesized ontological picture of reality. This kind of certainly not always unproblematic and unspeculative reasoning is what Johnson’s position of ‘embodied realism’³⁶ could contribute to ontological investigations, provided that their methodology allows for empirical studies and, in particular, ordinary language analysis. A subdivision of the sensorimotor domain might look as follows, whereby it must always be kept in mind that such subdivisions do not imply ontological separations, but merely serve to clarify interconnected, gradual, and functional stages of one and the same process of fluctuation and stabilization:

$$(body/environment\ interactions \xrightarrow[\text{constitutes}]{} image\ schemas) \rightarrow sensorimotor\ domain$$

Subdividing the experiential domain, which Johnson does not, as such, do but which I think is crucial, allows us to distinguish two factors with which we experientially evaluate the elements of the sensorimotor domain. With ‘evaluate’ I do not only mean to ‘judge’, but first and foremost to ‘enrich with values’ and ‘to make valuable’, thus the attribution and discovery of meaning, the event of sense-making. Whereas the sensorimotor domain tends to be universal, both factors of the experiential domain are rather contingent and particular. Whereas the sensorimotor domain *enables* meaningfulness by connecting us to the world, both factors of the experiential domain *make meaning* in all its layers *actual* for the embodied ‘meaning for’. And whereas the elements of the sensorimotor domain prevail in the cognitive unconscious in the context of everyday experience, both factors of the experiential domain are consciously experienceable as far as we direct our awareness to them.

The first factor is the holistic immediateness of experience, in other words, the body-based experience of what comes to us from the world as integrative, meaningful wholes, namely as Gestalts.³⁷ It is clear that the notion of a Gestalt, with all of the part-whole relations it involves, is fundamental for an ontology of PWO that draws on experience and perception. It is principally in this factor of the experiential domain where the qualitative richness of the world is felt, not as something foreign and unknowable, but as natural and pervasive, as being real both outside and inside of the experiencing subject, as meaning_{sit} that comprises the two other kinds of meaning. “If you pay attention to how your world shows itself, you will indeed see that the flow of experience comes to us as unified wholes (gestalts) that are pervaded by an all-encompassing

³⁶“Embodied realism, as we understand it, is the view that the locus of experience, meaning, and thought is the ongoing series of embodied organism-environment interactions that constitute our understanding of the world. According to such a view, there is no ultimate separation of mind and body, and we are always ‘in touch’ with our world through our embodied acts and experiences.” [Johnson 2002: 249]

³⁷Of course, the correct German plural of Gestalt would be Gestalten. Since the English literature on this topic usually combines the German loan word ‘Gestalt’ with the English plural morpheme ‘s’, however, it seems reasonable to adapt to this terminological convention and to use ‘Gestalts’ as the English plural of ‘Gestalt’.

quality that makes the present situation what and how it is.” [Johnson 2007b: 73] Johnson sometimes identifies Gestalts with embodied image schemata,³⁸ which I think is misleading, because the skeletal nature of image schemata does not mesh with the qualitative richness of Gestalt experiences. I also disagree when Johnson, opposed to identifying Gestalts with image schemata, brings Gestalts too close to the ‘higher’ realm of concepts,³⁹ because Gestalt experiences share with the sensorimotor domain a preconceptual and prereflexive status. Due to the gradual and hardly separable dynamics in which body/environment interactions and complex, abstract concepts are but two correlative poles, it is, of course, comprehensible to ascribe the notion of Gestalts to its ‘neighboring’ stages like image schemata or concepts. But I think that this notion is better accounted for when it is classified as a part of the experiential domain, into and out of which image schemata and concepts naturally transition.

Distinguishing image schemata, Gestalt experiences and concepts is beneficial when we look at basic level categories that hold the middle ground between more special and more general categories. A house is the basic level category between a skyscraper (subordinate category) and a building (superordinate category); a tree is the basic level category between a birch (subordinate category) and a perennial plant (superordinate category). Johnson argues that our basic level of experience, thus our experiential domain, to which Gestalt experience also belongs, allows us to function and interact well on the level of basic categories. We enter a room and we see: a table, chairs, a few persons, a tree outside the window. We have an overall Gestalt experience of basic level categories that are manifested in particular objects and situations. Neither is this experiential domain the level of image schemata, because the latter “is the level that defines form itself, and allows us to [unconsciously, M.S.] make sense of the relations among diverse experiences” [Johnson 1987: 208], nor is the experiential domain of Gestalt experiences congruent with the more abstract domain in which we conceptualize what has been experienced, because “though basic-level and image-schematic structures are meaningful for us in the most immediate and automatic way, they by no means exhaust our understanding. We need a lot more than concepts at those levels to function successfully for our purposes. To make sense of our experience, we need categories that are superordinate and subordinate to basic-level categories.” [id.] This means that Gestalt experiences are, on the one hand, inseparable from other stages of embodied understanding and metaphoric inferences, while, on the other hand, they must be well distinguished in order to highlight their unique role for meaningful, qualitative experience.

The second constitutive factor of the experiential domain consists in the sociocultural background in the widest sense, thus including the linguistic, historical, political, religious and social

³⁸“My argument begins by showing that human bodily movement, manipulation of objects, and perceptual interactions involve recurring patterns without which our experience would be chaotic and incomprehensible. I call these patterns ‘image schemata,’ because they function primarily as abstract structures of images. They are gestalt structures, consisting of parts standing in relations and organized into unified wholes, by means of which our experience manifests discernible order.” [Johnson 1987: xix]

³⁹“Thus we classify particular experiences in terms of experiential gestalts in our conceptual system. Here we must distinguish between: (1) the experience itself, as we structure it, and (2) the concepts that we employ in structuring it, that is, the multidimensional gestalts like CONVERSATION and ARGUMENT. The concept (say, CONVERSATION) specifies certain natural dimensions (e.g., participants, parts, stages, etc.) and how these dimensions are related. There is a correlation, dimension by dimension, between the concept CONVERSATION and the aspects of the actual activity of conversing. This is what we mean when we say that a concept fits an experience.” [Johnson et al. 1980: 83]

settings in which the embodied ‘meaning for’ is making sense of the contents of its experiences. For heuristic reasons we could say that whereas Gestalt experience is more closely tied to our bodily sense organs, our cognitive preference for basic-level categories, the phenomenological awareness of the ways we experience, and some psychological dispositions in which wholeness is often experienced prior to parthood, the sociocultural background in the widest sense comes to us from sources outside our physiological and psychological constitution. Nonetheless, this manifold background is shaping the experiential domain and co-evaluating the sensorimotor domain as strongly as Gestalt experience, which is why these factors are hard to distinguish in practice. In everyday contexts, both factors are inseparable, one from the other and from the rather physical and spatio-temporal dimension of the sensorimotor domain as well as from the abstract domains of conceptual thinking and language in which they result.⁴⁰ Johnson and Lakoff [1980: 57] write that “what we call ‘direct physical experience’ is never merely a matter of having a body of a certain sort; rather, *every* experience takes place within a vast background of cultural presuppositions. It can be misleading, therefore, to speak of direct physical experience as though there were some core of immediate experience which we then ‘interpret’ in terms of our conceptual system. Cultural assumptions, values, and attitudes are not a conceptual overlay which we may or may not place upon experience as we choose. It would be more correct to say that all experience is cultural through and through, that we experience our ‘world’ in such a way that our culture is already present in the very experience itself.” The sociocultural factor of a primary metaphor always points towards or inaugurates the primary metaphor’s mapping to a complex metaphor. Therefore, all complex metaphors are clearly socioculturally coined.

However, the sociocultural characteristics of a complex metaphor are already ascribable to the choice of primary metaphors that are then mapped into complex metaphors. Take the primary metaphor WAR as an example. With WAR, many complex metaphors can be created like LOVE IS WAR, CONVERSATION IS WAR, ARGUMENT IS WAR, NATURE IS WAR, SCHOOL IS WAR, etc. I will look at such complex metaphors in the next subsection. Not only the fact that we can conceptualize love, conversations, etc. as warlike is culturally determined, but also the fact that war itself can stand out as a primary metaphor in the first place. In the sensorimotor domain, every body constantly experiences confrontations and conflicts with or among objects, like when you stumble, when you bang your head against the ceiling, when you are brawling with somebody, when you see how two cars collide in an accident. In such situations, our bodies perceive or experience physical force combined with pain or destruction. Within the sensorimotor domain, such universal body/environment interactions can be schematized as the confrontation of two forces, like when two arrows point towards each other. In our Gestalt experience of reality, we can immediately experience such conflicting forces like when we are spectators of a sport match, when we take part in a demonstration against a new law, or when we engage in a lively discussion and exchange arguments. One of the most pervasive and holistic attributes of such situations consists in the confrontation of forces, physically as well as figuratively. But it is an utterly sociocultural matter to evaluate such forces, which

⁴⁰“I have only attempted to suggest that cognition cannot be locked up within the private workings of an individual mind. Since thought is a form of coordinated action, it is spread out in the world, coordinated with both the physical environment and the social, cultural, moral, political, and religious environments, institutions, and shared practices. Language – and all forms of symbolic expression – are quintessentially social behaviors.” [Johnson 2007a: 151]

are basically neutral, as WAR, with the primary metaphors WAR IS CONFLICT or WAR IS THE CONFRONTATION OF PHYSICAL FORCES. Only in cultures for which war plays an important role can primary and consequently complex metaphors involving WAR get the upper hand. It is possible that for other cultures in which war is less dominant, the confrontation of forces rather points to the possibility of novelty, progress, or chance.

The same is the case with PURPOSE. For example, the complex metaphor a PURPOSEFUL LIFE IS A JOURNEY entails the primary metaphor PURPOSES ARE DESTINATIONS. Already the motivation that universal, spatial destinations are evaluated as purposes and not only the “cultural belief that everyone is supposed to have a purpose in life” [Johnson et al. 1999: 62], which underlies the complex metaphor, is sociocultural to the core. We can assume that cultures in which there is a strong tendency of instrumental reason, in which rather the destination as aim and less the ways towards or from it is the actual purpose, a primary metaphor like PURPOSES ARE DESTINATIONS is more prevailing than a primary metaphor like PURPOSES ARE PATHS or UNCERTAINTIES ARE DESTINATIONS. Or, to give another example, although we have universal body-based schemata like front and back, “in some cultures the future is in front of us, whereas in others it is in back.” [Johnson et al. 1980: 14] Thus how we (rarely) consciously and (mostly) unconsciously evaluate, i.e. interpret, the elements of the sensorimotor domain is never free from the sociocultural factor, because not only our abstract concepts, but also our bodies are never isolated nor isolatable from socioculturally colored environments in and with which they interact.⁴¹ The consideration of this sociocultural factor makes the approach of cognitive linguistics, firstly, even more empirical than any simple analysis of ordinary language could pretend to be. It, secondly, makes this approach less naturalistic than an exclusive insistence on the sensorimotor domain would make us suppose. And it, thirdly, accounts for the fact that different cultures have developed different logics that may be inconsistent with each other without becoming invalid.⁴² The experiential domain of primary metaphors can then be depicted as:

$$(Gestalt\ experience + sociocultural\ background) \rightarrow experiential\ domain$$

After this delineation of the composition of the two domains of primary metaphor, it must again be pointed out that primary metaphors are exclusively conceptual, i.e. cognitive in nature. This means that the constitution of primary metaphors is situated in the cognitive unconscious, which is hardly accessible even for phenomenological introspection. Moreover, primary metaphors originate for the most part in early childhood. Johnson argues that our very first bodily interactions with and perceptions of our environment, including the fact that

⁴¹Cf. Taylor [2016: 159–160] for a similar discussion of the sociocultural background for the complex metaphor LOVE IS A JOURNEY and cf. Quinn [1991] for a critical discussion of this topic in general.

⁴²A culture that regards reality as unmoving and passive but the soul as fleeting and active, for example, will conceptualize time differently than a culture for which reality is in flux while the soul is eternal. This gives rise to different temporal logics in the abstract metaphorical domain in which complex metaphors are formed. “In the MOVING TIME metaphor, times are moving objects, whereas in the MOVING OBSERVER metaphor, times are stationary locations on the time landscape. This inconsistency of multiple metaphorical structurings of a single concept is typical of a vast range of abstract concepts, including causation, morality, mind, self, love, ideas, thought, and knowledge [...]. My claim is that each of these different, and often inconsistent, metaphorical structurings of a concept gives us the different logics that we need in order to understand the richness and complexity of our experience. However strong our desire for a monolithic, consistent ontology might be, the evidence does not support such a unified and simple view of human experience.” [Johnson 2007b: 259]

we are socialized and culturalized congenitally, not only determines the development of our primary metaphors, but also our ways of thinking and expressing in general. During the major development of primary metaphors, we feel ourselves, as infants, not distanced from the world around us. The ontological unity of body/mind/world, through which primary metaphors come into existence, feels natural and unquestionable for us in the early stages of development. Only at later stages, in consequence of the necessity to abstract away from immediate givens in order to reason and to express ourselves adequately, do we take the structure and the objects of the world around us to be mind-independent. In so doing, the actual bodily connectedness to the world, often even the reliance on the sociocultural factor through which we evaluate our experiences, falls into oblivion.⁴³

It is certainly the case that we, including our concepts and ontological categories, are much closer to the mind-shaping and mind-shaped reality than we generally tend to *think* (not to *experience*). But it is also the case that the nexus that binds us to the world around us, thus our body-based primary metaphors, are hard to expose just by hypothetically reconstructing their constitution and thus by assuming what might go on in our cognitive unconscious. Especially when we are looking for a hypothesized ontological category such as PWO that should not only be and actually cannot be an abstract, a priori concept, it is impossible to delimit such a quest to the realm of primary metaphors. As we do not have direct access to primary metaphors, the mere claim that they are embodied and mere hypotheses about how and why they are embodied would still be a priori reasoning, just in disguise. In order to be faithful to the claim that only with empirical methods can we disclose and systematize the realm of primary metaphor as a nexus to the world that we are attempting to investigate ontologically, we have to induce primary metaphors from somewhere. This ‘somewhere’ must be an empirical realm, because empirical methods can only make valid claims on what is empirical in nature. From where should we then empirically induce primary metaphors? From where should we start to validate whether PWO is an embodied ontological category such that it falls into the realm of primary metaphors? It is from ordinary language that this induction has to begin, and it is the domain of complex conceptual metaphors that we therefore have to elucidate, because complex conceptual metaphors are on the one hand embedded in our cognitive, embodied mind like primary metaphors, but on the other hand they are, unlike primary metaphors, integral parts of ordinary language.

4.2.2 Complex Conceptual Metaphors

A complex or ‘compound’ metaphor is formed when one or more primary metaphors are mapped into an abstract domain that has no sensorimotor grounding of its own. “Primary metaphors

⁴³“Notice, once again, that whatever the infant takes to be the most primordial ontological distinction is a question of *affordances*. It is not an absolute ontological fact that the world comes divided into two ultimate categories – human versus other-than-human – any more than that the basic categories are animate versus inanimate. Instead, the basic ontological categories *for embodied, social creatures like us* will depend on the nature of our bodies, our brains, our environment, and our social interactions. In other words, no matter what our ontological categories might be, or turn out in the future to be, they are not built into the nature of some allegedly mind-independent world. Our realism, as Hilary Putnam [...] has argued, is ‘realism with a human face’; what we ‘take’ as real depends on how we experience things via the affordances of our world at a given time and place, relative to our bodies, our interests, and our purposes in making conceptual distinctions.” [Johnson 2007b: 40]

are like atoms that can be put together to form molecules. A great many of these complex molecular metaphors are stable-conventionalized, entrenched, fixed for long periods of time. They form a huge part of our conceptual system and affect how we think and what we care about almost every waking moment.” [Johnson et al. 1999: 60] Consequently in our everyday language, we can find a plethora of variations of complex metaphors.

One example of a complex metaphor has already been given in the previous paragraph: A PURPOSEFUL LIFE IS A JOURNEY. On the one hand, this complex metaphor refers back to the primary metaphors it is composed of:⁴⁴ (1) PURPOSES ARE DESTINATIONS and (2) ACTIONS ARE MOTIONS. Additionally, like primary metaphors but to a somewhat lesser degree, complex metaphors rely to a high degree on the sociocultural factor. The sociocultural belief that conditions the complex metaphor A PURPOSEFUL LIFE IS A JOURNEY is that people “are supposed to have purposes in life, and they are supposed to act so as to achieve those purposes.” [id.: 61] If we combine the primary metaphors with this sociocultural factor, then we get “People are supposed to have destinations in life, and they are supposed to move so as to reach those destinations.” [id.] In this case, we only have to implement what Johnson calls a ‘simple fact’ but what I think is actually another sociocultural component, namely that “A long trip to a series of destinations is a journey” [id.]. Once we have thus formed the complex metaphor A PURPOSEFUL LIFE IS A JOURNEY, we can relate many variations of it that are found in ordinary language to this conceptual metaphor. Such variations cover central entailments of this metaphor: if a purposeful life is a journey, then the person who lives this life is a traveler; then life goals are destinations; then a life plan is an itinerary. From there, we can form and understand metaphorical expressions like ‘I don’t know where to go in my life’, ‘you need to find a new direction in life’, ‘she has to reorient herself’, ‘finally he reached happiness’, ‘he needs to plan his life anew’, ‘I had some ups and downs but now I’m back on track’, or ‘she wants to go in life where no one went before’.

The mapping of several primary metaphors to how we experience and conceptualize life as purposeful is reflected in many linguistic expressions that describe a single person’s ‘course’ of life. The more primary metaphors we map into the conceptualization of what a purposeful life means to us, the more linguistic expressions are possible. If we additionally map, for example, the primary metaphor STATES ARE LOCATIONS, then we understand the expression ‘He’s *at a crossroads* in his life’. Or if we map CHANGE IS MOTION, then it becomes clear why we can say and understand ‘he went *from* his forties *to* his fifties without a hint of a mid-life crisis’.⁴⁵ Furthermore, complex metaphors “can be used as the basis for even more complex metaphors. [...] The neural connectivity of the brain makes it natural for complex metaphorical mappings to be built out of preexisting mappings, starting with primary metaphors.” [id.: 63–4] The complex metaphor A PURPOSEFUL LIFE IS A JOURNEY, which normally applies to one person’s life, can be extended to the common life of two persons. This is particularly the case when we conceptualize love as a journey, where a “couple’s life together is also supposed to be a journey to common goals.” [id.: 64] The example sentences just given can be easily modified and understood for LOVE IS A JOURNEY when we use first person plural and substitute ‘life’ for ‘love’.

What complex metaphors have in common with primary metaphors is not only their depen-

⁴⁴Here I draw on Johnson et al. [1999: 60 f.].

⁴⁵These two examples are taken from Evans [2007: 109 f.].

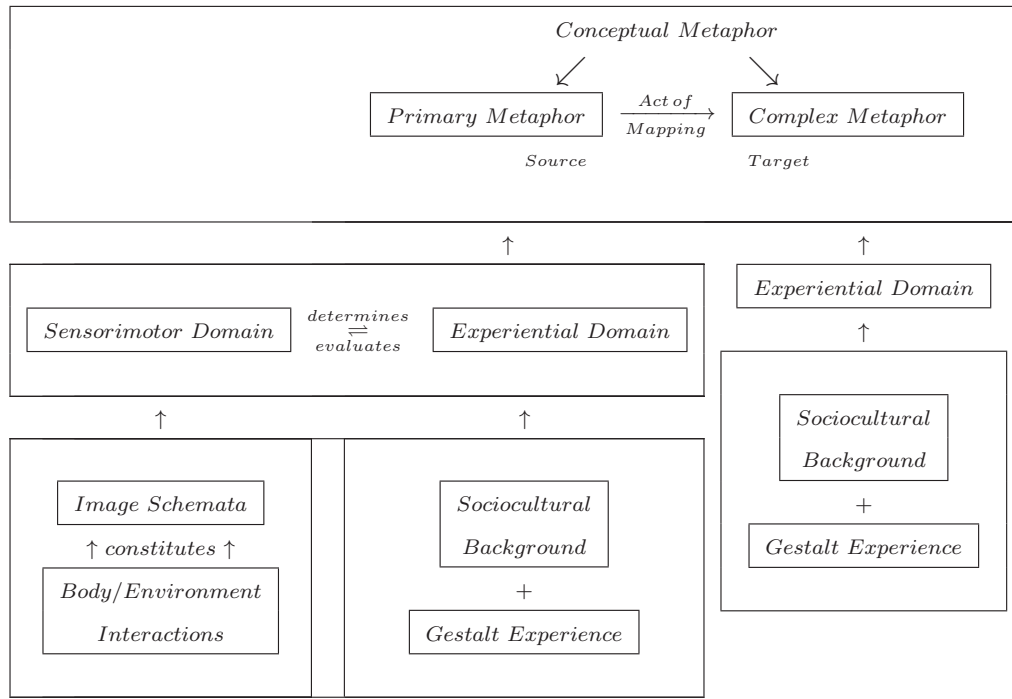
dency on sociocultural contexts, in which complex metaphors even exceed primary metaphors, because complex metaphors, although they are equally conceptual, stand much closer to specific conventions all around natural languages. Complex metaphors are also constituted by holistic Gestalt experiences of meaning, just that these experiences do not directly evaluate the sensorimotor domain like the experiential domain of primary metaphors does. Still, we really *feel* it when we, for example, encounter some stumbling blocks in our love relationship as if we stumble on physical obstacles, or when we lose orientation in our lives as if we lost orientation in a forest, or, to draw on the complex metaphor ARGUMENT IS WAR,⁴⁶ when we *defend* our position and *attack* other positions in a philosophical debate as if we are fighting with a sparring partner or even an enemy. Such experiences are really there, cognitively as well as intersubjectively. They can define the whole character of a love relationship, a phase in life, or a question and answer panel at a conference. The complexity of complex metaphors should not mislead us to think that what is expressed in and via such a metaphor is not directly experienced as a situation's pervasive Gestalt, thus in our terms as 'meaning_{sit} of'. We just do not have the right concepts to comprehend and words to express such a situation. This is why we have to draw on primary metaphors and interpret them according to the conventions of our cultures and natural languages and according to the degree of poetic imagination with which we can actively modify standard expressions like 'we are at a difficult point in our relationship' and renew them to e.g. 'the ground of our relationship is shaking, but we are unafraid to fall'. People of cultures in which love relationships are unusual or in which journeys are unknown would find it difficult to have a Gestalt experience of their relationships that conforms to the complex LOVE IS A JOURNEY metaphor. But this does not mean that these people have different sensorimotor domains or even different primary metaphors that are contingently mapped into the complex metaphor in question.

Many more examples for primary and complex metaphors can be found in the vast amount of literature on cognitive linguistics, but what is more important, they can always and often effortlessly be identified in plenty of expressions in our everyday languages, as 'real-world data' so to speak. In order to proceed to the question of whether or not we also use parts and wholes and PWO metaphorically in our conceptualized, embodied ordinary languages, it is worthwhile to integrate the following model of complex metaphors

$$\text{primary metaphor} \xrightarrow[\text{mapping}]{\text{act of}} ((\text{Gestalt experience} + \text{sociocultural background}) \rightarrow \text{complex metaphor})$$

into the model of conceptual metaphors in general, now displayed as a simplified diagram (Figure 4-1) that displays how I understand Johnson's take on conceptual metaphor thus far:

⁴⁶Cf. Johnson et al. [1980: 4].

Figure 4-1: *Conceptual Metaphor*

4.2.3 Across Domains: The Act of Metaphorical Mapping

Before we can begin with the question of whether or not PWO should be regarded as an embodied, conceptual metaphor, it is important to mention one important peculiarity of conceptual metaphor in general. This peculiarity concerns the act of metaphorical mapping. It involves the experiential domain that is constitutive of the primary metaphor and the experiential domain that is constitutive of the complex metaphor. We consciously and unconsciously map one or more primary metaphors to a complex metaphor in order to conceptualize and express an experience that is too abstract or too complex to rely directly on a sensorimotor grounding on its own. Thus we activate the experiential domain of one or more primary metaphors, which are themselves determined by the sensorimotor domain, and apply it to another experiential domain for which we do not have direct body-based concepts for conceptualization. A clear example for such an act of mapping is found in Croft's [2006: 278] discussion of Johnson's and Lakoff's take on metaphorical mapping. Croft presents the following two sentences:

- (1) She's in the living room.
- (2) She's in a good mood.

The experiential domain of the first sentence is directly determined by two sensorimotor domains: the sensorimotor domain of locations and the sensorimotor domain of containment. These two sensorimotor domains come into existence by the facts that our bodies are constantly physically located somewhere in the world and that our bodies are constantly interacting with the inside or outside of themselves (e.g. our process of breathing in and out, our excretions and secretions, the boundaries of our visual fields) and other objects.⁴⁷ They are thus two closely connected body/environment interactions that give rise to appropriate image

⁴⁷"We are physical beings, bounded and set off from the rest of the world by the surface of our skins, and

schemata.⁴⁸ Together, they determine the experiential domain in which we or another person is *in* a particular *location*, for example in the living room. Depending on the context, this experiential domain either evaluates the sensorimotor domain of locations (e.g. when we ask: ‘*where* is she?’), or of containments (e.g. ‘*in* which room is she?’), or both at the same time. The two resulting primary metaphors would be PERSONAL LOCATION IS BODILY LOCATION (i.e. the whole person is located where her body is located) and PERSONAL CONTAINMENT IS BODILY CONTAINMENT (i.e. the whole person is contained in what contains her body). These primary metaphors stand out against a sociocultural background in which the material (the body) and the immaterial (the mind, as representative of a person) are spatially congruent.⁴⁹ Now we can combine these two primary metaphors and map them into a target domain that itself has no body-based metaphors to be expressed directly. A mood is such a domain. In order to conceptualize and express a mood, we have to make use of more basic structures that are derived from source domains consisting of primary metaphors. In this case, ‘mood’ or ‘good mood’ is conceptualized as a container in which somebody can enter and stay for a while. Of course, ‘mood’ is only a location and a container in a figurative way of thinking, which is why it is strange to answer ‘well, she is in a good mood’ when we ask ‘where is she?’ or ‘is she inside or outside?’ Rather, the state in which she is in, her mood, is a complex metaphor, i.e. a fusion of STATES ARE PERSONAL LOCATIONS and STATES ARE PERSONAL CONTAINMENTS, which are complex metaphors in their own right. Thus “the emotional domain is conceptualized as having the same or similar structure to space by the use of the predicate *in*.” [id.]⁵⁰

Generally we can say that conceptual metaphors that involve complex metaphors are mappings from a source domain of primary metaphors to a target domain of complex metaphors if and only if the experiential domain of the source domain and the experiential domain of the target domain are not overlapping. To illustrate this, we can think of mapping as a cognitive copy-and-paste process: we copy an element from one experiential domain and paste it into another experiential domain. The socioculturally influenced Gestalt experience of the source domain and the one of the target domain should be more or less disparate for the act of metaphorical mapping to be fruitful. While personal/bodily location and personal/bodily

we experience the rest of the world as outside us. Each of us is a container, with a bounding surface and an in-out orientation. We project our own in-out orientation onto other physical objects that are bounded by surfaces. Thus we also view them as containers with an inside and an outside. Rooms and houses are obvious containers. Moving from room to room is moving from one container to another, that is, moving out of one room and into another. [...] But even where there is no natural physical boundary that can be viewed as defining a container, we impose boundaries – marking off territory so that it has an inside and a bounding surface – whether a wall, a fence, or an abstract line or plane. There are few human instincts more basic than territoriality. And such defining of a territory, putting a boundary around it, is an act of quantification.” [Johnson et al. 1980: 29]

⁴⁸Cf. on image schemata section 5.1.

⁴⁹It is also conceivable that although the person’s body is in the living room, their mind is directed to another place. Maybe they imagine themselves to be in the bathroom, or are simply daydreaming, or are meditating and have a full-blown disembodied experience. To say that ‘they are in the living room’ is then correct only against a cultural background in which the spatiotemporal location of the body is congruent with the location of the mind, whereas in other cultures it would be more appropriate to say that ‘they are somewhere else’ (without ironic connotations).

⁵⁰Other examples in which emotional states are conceptualized as physical states are given in Johnson et al. [1980: 32]: “He’s *in* love. We’re *out of* trouble now. He’s *coming out of* the coma. I’m *slowly getting into* shape. He *entered* a state of euphoria. He *fell into* a depression. He finally *emerged from* the catatonic state he had been in since the end of finals week.”

containment are overlapping experiential domains, i.e. a set of congeneric domains belonging to what Langacker [2008: 44] calls a “domain matrix”, they can be classified as primary metaphors (source) and be mapped together into the source domain. The experiential domain of emotions as states we are in (target), however, does not overlap with the experiential domain of personal/bodily location/containment. We have to map *across* domains in order to find conceptualizations and adequate expressions for experiential domains in which these are originally missing, because no sensorimotor domain is available that directly determines the experiential domain in question. Metaphorical mapping is thus mapping across domains that are experienced as being *in toto* disjointed from each other. Lakoff even goes as far as talking about ‘ontological’ domains in the context of cross-domain mapping.⁵¹ This is why novel metaphors, in which an element of one experiential domain is mapped into a very different experiential domain, can have surprising or even poetic effects.

However, although the source domain and the target domain differ in the case of complex conceptual metaphors, there must be some justification for the establishment of a link between the two. Several (cognitive) linguists claim that there has to be some kind of *similarity* between the target and the source domain that enables the metaphorical mapping.⁵² While the domains themselves are different, the source domain comprises a particular element that is taken to be *similar* to an element in the target domain for which there either is no adequate concept or for which the metaphor can provide a more fitting one. In the act of cross-domain mapping, we consciously discover or unconsciously draw on such an element and in so doing create or refer to a kind of intersection between genuinely different domains. When we apply Jakobson’s influential characterization of metaphors as being based on lexical similarities and processes of selection and substitution to cognitive linguistics’ notion of conceptual metaphor, we could say that in metaphorical mapping, we *select* a specific element that is similar in the source and target domain and *substitute* what lacks sensorimotor foundation in the target domain for the element that has this foundation in the source domain.⁵³ For example, although the domains of a spatial container and an emotional state are quite different, the mapping of ‘in’ is justified, because we can enter and leave a room like we enter and leave a mood. It would be equally correct to say metaphorically that a mood enters and leaves us (e.g. ‘a bad mood crept inside me’), whereby the mapping had to be established via the selection of a similar element within a source domain in which we (e.g. our bodies) would be the container instead of the contained. In both cases, we select one element that is similar in both domains and substitute its occurrence in the target domain for its similar occurrence in the source domain.

Furthermore, it is one of the defining characteristics of metaphorical cross-domain mapping that the source domain often forfeits its evidence. Mainly in the case of conventional or ‘dead’ metaphors, there can be a “‘complete’ distance” [Dirven 2003b: 109] between the domains such that we are not aware, for example, that an entity can *actually* be ‘in’ only in physical containers, whereas we unconsciously take for granted that an entity is ‘in’ an emotional state and thereby forget that this is a *figurative* conceptualization based on the embodied cognition

⁵¹“The ontological correspondences that constitute the *love is a journey* metaphor map the ontology of travel onto the ontology of love.” [Lakoff 1994: 47]

⁵²Cf. for example Jakobson [1990] and Johnson et al. [1980: 151 f.]. For an overview and a critical discussion cf. Barnden [2010: 6] and Littlemore [2015: 4].

⁵³Cf. Jakobson [1990] and the clarification of it (followed by a well-founded critique of Jakobson’s model) in Bredin [1984b: 90].

of another domain. Dirven [id.: 100] states that in “metaphor, [...] two elements are brought together, but the source domain loses its existence when mapped onto the target domain. Although the source domain itself is wiped out, some aspects of its own nature or structure are transferred to that of the target domain. The contrast between the two elements or domains is often so great that this disparity can only lead to full substitution of one domain by the other.” Yet it is not impossible to depict the often forgotten source domain. As a rule of thumb that is sufficient for the purposes of the present project, we can recognize the similar element of the otherwise heterogeneous source and target domains by applying what R. Gibbs calls the ‘*is like* test’: “Figurative statements of the *X is like Y* form are most meaningful when X and Y represent terms from different conceptual domains. If a non-literal comparison between two things is meaningful when seen in an *X is like Y* statement, then it is metaphorical [...]” [Gibbs 1999b: 36] To apply this rule of thumb to our example, one element (being in) of an emotional state (a good mood) *is like* an element (being in) of a physical container/location (a living room), because both are similar as to the experience of being enclosed by borders that somehow define our momentary state of being. In the same manner, both can be heavy, inescapable, back-breaking, never-ending or unstable. In other respects, however, the domains in question are unequal because, for example, a physical container can be movable, destructible by force, inhabitable, transitive or stackable, while this is not the case for emotional states that may be, in contrast, fleeting, curable, inspiring, scary, or contagious – for which we would have to draw on other primary metaphors that are mapped in order to make such conceptualizations possible and expressible.

Obviously, not only are emotional domains lacking – but they are indirectly conceptualized via – primary metaphors with sensorimotor grounding. Johnson demonstrates that this is also the case for highly abstract domains. For instance, the primary conceptual metaphor CATEGORIES ARE CONTAINERS can be mapped into the seemingly abstract domain of syllogistic logic, thereby grounding the latter, because “the logic of our bodily experience provides all the logic we need in order to perform every rational inference, even with the most abstract concepts.” [Johnson 2007b: 179] In the sensorimotor domain, we constantly interact with or experience ourselves as containers, whereby we firstly experience the logical ‘law of the excluded middle’ by experiencing that an “entity is either inside the container or outside it, but not both at once”⁵⁴ [id.].

Secondly, our body/environment interactions with containers and the resulting image schema form the basis for syllogistic reasoning, because if “I place object O within physical container C and then put container C inside of container D, then object O is in container D.”⁵⁵ [id.] In addition, however, I think it is important to point out that the Gestalt experience of ‘categories’ in the primary metaphor CATEGORIES ARE CONTAINERS, i.e. the source domain, must be distinguished from the understanding of ‘categories’ as a more abstract content of experience – the experience of a priori reasoning – in the target domain of pure logic. To me it seems that

⁵⁴This sensorimotor experience we then metaphorically map into the abstract domain of categories. “An entity either falls within a given category or falls outside it, but not both at once. For example: Charles cannot be a man and not a man at the same time, in the same place, and in the same manner.” [id.]

⁵⁵“If entity E is in category C’, and category C’ is in category D’, then entity E is in category D’. For example: All men are mortal (C’ is in D’) and Socrates is a man (E is in C’); therefore, Socrates is mortal (E is in D’).” [id.] - Cf. on this example also Lakoff [1994: 52] and cf. Macnamara [1994] on the relationship between logic, cognition and psychology beyond the particular hypotheses of Johnson and Lakoff.

the experiential domain of the primary metaphor already includes the experience of certain categories, namely basic-level categories, in this case medium-sized physical containers such as the human body or a box of chocolates or the bag we pick up at the supermarket counter. This is why CATEGORIES ARE CONTAINERS is classifiable as a primary metaphor in the first place: basic-level categories and physical containers are members of the same experiential domain or domain matrix. One and the same experiential domain or domain matrix can include both without inconsistencies or demands for ancillary experiential domains. In our sensorimotor interaction with the environment, we not only know what containers are thanks to our Gestalt experiences of physical containment, but, in the same fashion, we also know what basic level categories are. This implicit knowledge forms the similarity that allows us to map CATEGORIES ARE CONTAINERS into the abstract domain in which non-basic-level categories are abstract containers. Only then does the act of mapping transfer contents from one domain “to a domain of a different kind” [Johnson 1999: 94].

Thus in this case too it is helpful to apply Gibbs’ ‘*is like* test’ and recognize the *similarity* of basic-level and abstract categories that enables the cross-domain mapping of source to target domain: abstract categories *are like* basic-level categories in that both can contain or be contained in something else, while they are dissimilar in many other respects. – This may seem to be only a minor comment on the example given by Johnson. The actual reason for accentuating the necessity of domain-difference and experienced similarity of domain-elements in the case of conceptual metaphor will become clear in the case of *metonymic* mapping,⁵⁶ which is a mapping *within* and not *across* experiential domains. This will turn out to be the area in which the embodied cognition of PWO as underlying a plenitude of our ordinary linguistic communication and commonsense understanding becomes essential.

A final point that is significant when we talk about cross-domain mapping of conceptual metaphors concerns the nature of the experiential domain. Until now, I have used the notion of ‘experiential domain’ only in a vague sense to distinguish the physical from the emotional and the abstract domain. These are very broad areas with fuzzy borders. The problem is that even in the literature of cognitive linguistics, there is no clear-cut and unanimously accepted definition of what we can understand as an experiential domain. Some authors use the terms ‘frame’, ‘scene’ or ‘scenario’ for an experiential domain and describe it as comprising “static or dynamic mental representations of typical situations in life and their typical elements”, whereby the “content and the shape of a frame depends on our everyday experience, on our world knowledge. Beings, things, processes, and actions that generally or ideally occur together are represented in the mind as a frame.” [Blank 1999: 173]. But is it philosophically justified to use the term ‘representation’ when we accept with Johnson that there is no strict dichotomy between mind and world? Are we not rather directly *embodied in* our interactions with the environment and sociocultural backgrounds instead of them being indirectly *represented* in a disembodied mind?⁵⁷ A similar concern can be raised when we consider Lakoff’s influential delineation of an experiential domain as an Idealized Cognitive Model (ICM).⁵⁸ Although this

⁵⁶Cf. section 5.2.

⁵⁷Cf. Dreyfus et al. [2015] for a profound and constructive critique of representationalism in the history of philosophy.

⁵⁸“An idealized cognitive model may fit one’s understanding of the world either perfectly, very well, pretty well, somewhat well, pretty badly, badly, or not at all. If the ICM in which *bachelor* is defined fits a situation perfectly and the person referred to by the term is unequivocally an unmarried adult male, then he qualifies

conception has some benefits, such as the recognition of salient properties that partly make up for a Gestalt experience, its insistence on the separation of reality and the cognitive-conceptual realm implies to me an at least epistemological dualism that factors out the ‘realness’ of our experiences in favor of their ideality in our minds.⁵⁹ Likewise, I find it unsatisfactory from a philosophical perspective when the experiential domain is reduced to a “conceptual domain” [Evans 2007: 61], a “lexical domain” [Riemer 2003: 380], a “knowledge network” [Croft 2006: 270], an “internally coherent knowledge construct” [Ruiz de Mendoza 2014: 144], or a network of semantic association.⁶⁰ Gestalt experience as such is neither only conceptual, linguistic and known in the field of primary metaphor, where it is rather unconscious, embodied and preconceptual, nor in the field of complex metaphors, where there is an experienced ‘conceptual vacuum’ that is in need of one or more primary metaphors to fill it.

A comparably rich and experience-based characterization of domains, whereby the experiential domain is understood as a cognitive domain, comes from Langacker [2008: 44–5], who writes that an “expression is said to invoke a set of cognitive domains as the basis for its meaning”. A cognitive domain can be “broadly interpreted as indicating any kind of conception or realm of experience.” [id.] He explains that “how many domains we recognize, and which ones, depends on our purpose and to some extent is arbitrary.” [id.] Some domains, such as space, time and unanalyzed experiences of colors, pitches, temperature, tastes and smells would be basic and preconceptual, whereas most domains were nonbasic and would consist of “instances of immediate sensory, emotive, and motor/kinesthetic experience [...] as well as the abstracted products of intellectual operations” and “conceptions manifested instantaneously at the level of conscious awareness (e.g. the image of a circle), as well as elaborate scenarios that we can only conceptualize stage by stage through processing time [...]. There is no requirement that a nonbasic domain be fixed, established, or conventionally recognized. Apprehension of the situational context thus qualifies as a cognitive domain, as does the previous discourse.” [id.] If we add to this the indispensable sociocultural factor, then we have to conclude that basically and ‘nonbasically’ every instant of our conscious and unconscious life happens in at least one experiential domain. Although I think that this is indeed the case and that Langacker’s characterization of the cognitive/experiential domain is therefore instructive, it is still justified to ask in what sense then the experiential domain is *determined* by the sensorimotor domain. Langacker’s characterization of cognitive domains seems to cope well with the experiential dimension of the primary source and the complex target domain of conceptual metaphors, but what I am missing is a clear account of how and why the cognitive domain relates to our bodies and thus via our bodies to the reality we constantly interact with.

In fact, while Langacker accentuates the capacities of the disembodied mental realm, he reduces bodily experience to the immediateness of physical body/environment interaction.⁶¹ To

as a member of the category *bachelor*.” [Lakoff 1987: 70]

⁵⁹“This kind of explanation cannot be given in a noncognitive theory one in which a concept either fits the world as it is or not. The background conditions of the *bachelor* ICM rarely make a perfect seamless fit with the world as we know it. Still we can apply the concept with some degree of accuracy to situations where the background conditions don’t quite mesh with our knowledge. And the worse the fit between the background conditions of the ICM and our knowledge, the less appropriate it is for us to apply the concept. The result is a gradience – a simple kind of prototype effect.” [id.: 71]

⁶⁰Cf. Benczes [2011: 213].

⁶¹“Ultimately, the world we construct is grounded in our experience as creatures with bodies who interact with their surroundings through physical processes involving sensory and motor activity. This is known in

this it could be responded, with Johnson, that embodiment also entails the embodiment of meaning in situational contexts in which not just physical interactions with objects take place, but in which also e.g. moral, aesthetic, emotional, or spiritual values are experienced as meaningful.⁶² Furthermore, it seems that Langacker makes the existence of a cognitive/experiential domain dependent on our subjective recognition and apprehension of it. If I interpret him correctly here, then I have to disagree. Firstly, the experiential domain's evaluation is not arbitrary, but depends on how the sensorimotor domain determines it via embodied image schemata, which bestows a certain degree of intersubjective universality to our otherwise highly subjective and contingent experiences. Secondly, as is one of the principal research findings of Gestalt theory⁶³, most Gestalt experiences reveal to us the contents and forms of experience as being pre-organized wholes, the structuredness of which we directly experience. We do not arbitrarily impose structure on our experiences. We cognize (discern) rather than recognize (acknowledge) an experiential domain. In our everyday existence in the world at least, we are not distanced enough from what happens around and within us that we could purposefully decide and *revise* instead of phenomenologically discover and *describe* what counts how as our experiential domain. This latter approach to domains can also deal better with the open, often vague nature of experiential domains. As domains “do not have fixed boundaries and overlap with one another” [Benczes 2011: 208], the explicit delineation of a domain would draw lines and isolate where in fact we experience continuous transitions and occurrences.

In conclusion, on the one hand the experiential domain comprises every kind of experienced, coherent arrangement of qualities (from primary to tertiary, from the most basic to the most abstract, from preconceptual to conceptual, from instantaneous to temporally persistent) and is therefore, as such, hard to define in more precise terms. Not without reason can the experiential domain therefore be pictured as a “chunk of experience” [Geeraerts 2015: 424], and not without reason does Johnson bemoan the lack of profound descriptions of qualitative experience in cognitive linguistics while appealing to philosophy to resolve this desideratum.⁶⁴ On the other hand, we should keep in mind that the Gestalt experience of the experiential domain is *determined* by the sensorimotor domain of embodiment. This also makes the experiential domain embodied in a wider sense and encourages us to find certain patterns as mind/body/world connectives (i.e. image schemata) with which a more precise, universal and reality-oriented understanding of the experiential domain can be enabled.

cognitive linguistics as *embodiment*. But obviously, our mental life transcends the limits of immediate bodily experience. Various cognitive processes give rise to mental structures, at successive levels of organization, whose connection with such experience is progressively more remote. Not only do these structures allow us to cope with the real world more efficiently, but also they define – and vastly expand – what constitutes it. From our standpoint, the world we inhabit and engage has not just physical but also social, cultural, and intellectual dimensions. Once they are cognitively established, we can operate in these realms in largely autonomous fashion.” [Langacker 2008: 524–5]

⁶²“Our situations, with all of their summing up, implying, and carrying forward, are *embodied situations*. Meaning, therefore, is embodied. And neither the nonformal, nonconceptual, implicit aspects nor the explicit forms, patterns, words, and concepts are the meaning in themselves. Meaning resides in their situational relation as that relation develops and changes.” [Johnson 2007b: 83]

⁶³Cf. chapter 6, in particular section 6.3.

⁶⁴Cf. Johnson [2005: 28].

4.2.4 Ontological Conceptual Metaphors: Is PWO One of Them?

The question is if part-whole structures, in particular the oscillation between parts and wholes that, in the context of Husserl's 3rd LI, is inconsistent in a purely formal sense, can be regarded as a conceptual metaphor. This would make it possible to link a certain aspect of ordinary language – viz. part-whole metaphors – via processes of embodied cognition with the environment, i.e. the world or reality we interact with with our bodies. In this subsection, I would like to argue that PWO is not a conceptual metaphor, for several reasons. To begin with, let us recall the characterization of PWO given at the end of section 2.3:

PWO_{ded} A part-whole oscillation (PWO) is the dynamic interplay of moments and whole within the same entity. It occurs when, during the fusion (continuation) of moments and whole, both moments and whole become distinguishable (discontinuous) as well. During their continuation, the moments and the whole stand out alternately and the entity in question displays both the qualities of the moments and the potentially different or even contradictory qualities of the whole.

Is there at least one type of conceptual metaphor, whether primary or complex, that conforms to this characterization? Since I am interested in the ontological nature of PWO, the question can be specified: Is there at least one type of conceptual metaphor, whether primary or complex, that offers valuable clues concerning the ontological nature of PWO? If there is at least one such type of conceptual metaphor, then it must be found in the group of conceptual metaphors that Johnson and Lakoff call 'ontological metaphors'. This group seems to be, at least in terms of its name, the most promising for the present ontological investigation.

Ontological metaphors belong to the most basic kind of metaphors; they are thus primary to such an extent that we normally do not notice their metaphorical character, even when, or especially because, they are mapped into complex ontological metaphors in everyday language. In the sensory domain, an ontological metaphor comes into being via our interaction with stable physical objects and containers. The experiential domain evaluates these sensorimotor data as entities and substances, which are ontological categories. "Understanding our experiences in terms of objects and substances allows us to pick out parts of our experience and treat them as discrete entities or substances of a uniform kind. Once we can identify our experiences as entities or substances, we can refer to them, categorize them, group them, and quantify them – and, by this means, reason about them." [Johnson et al. 1980: 25] The primary ontological metaphor SUBSTANCES AND ENTITIES ARE PHYSICAL OBJECTS AND PHYSICAL CONTAINERS can thus be mapped into more abstract domains in order to figure out "ways of viewing events, activities, emotions, ideas, etc., as entities and substances." [id.] and in order to refer to, categorize, group or quantify events, activities, emotions, ideas etc. as we can do with physical objects and containers. This seems to imply that there are no more ontological categories than substances and entities, whereby it is not quite clear to me where Johnson and Lakoff see the difference between them. It could be critically remarked that this is a rather minimalistic inventory of ontological categories that is suggested by the notion of ontological metaphor. But now is not the time to engage further in this criticism.⁶⁵

⁶⁵It has to be mentioned, however, that after having written *Metaphors we live by*, where the notion of ontological metaphors was developed, Johnson and Lakoff themselves became more skeptical towards the limited

An example of an ontological metaphor would be the complex ontological metaphor THE MIND IS AN ENTITY that relies on the primary ontological metaphor ENTITIES ARE PHYSICAL OBJECTS. Although the mind is non-physical in itself, the ontological metaphor allows us to treat the mind as an entity in its own right so that we can refer to it, make valid or invalid claims about it, quantify it and compare it with other entities that may not share the mind's properties. However, merely "viewing a nonphysical thing as an entity or substance does not allow us to comprehend very much about it. But ontological metaphors may be further elaborated." [id.: 27] Thus, conceptualizing the mind just as a substance with certain properties is often not enough. This is why we can, for example, create the complex metaphors THE MIND IS A MACHINE⁶⁶ and THE MIND IS A BRITTLE OBJECT⁶⁷ to talk about the ontologized mind in coherent ways. Through sensorimotor interactions and bodily perceptions, but also through sociocultural knowledge, we all know what machines and fragile objects are. Therefore we understand the substantialized mind as a machine or fragile object, because in the act of metaphorical mapping, we draw on experiential similarities of elements belonging to these quite different domains. And as is typical for conceptual metaphors in general, the source domain often disappears when the target domain is activated. If I tell my colleague that the amount of beer I consumed last night is 'throwing a spanner in my work' today or that I have 'steam coming out of my ears' given my unpaid overtime, probably none of us is taking me for a real machine in order to understand the meaning of the utterances. "Ontological metaphors like these are so natural and so pervasive in our thought that they are usually taken as self-evident, direct descriptions of mental phenomena. The fact that they are metaphorical never occurs to most of us." [id.: 28] This aspect will be one of the reasons for the decision that *what is meant* by PWO in the above characterization of it should not be regarded as a conceptual metaphor, although metaphorical part-whole relations and oscillations can indeed be found in ordinary language as types of metaphors among many other things.

It is undeniable that the use of the term 'PWO', not just due to its being an abbreviation of 'part-whole oscillations', implies that there is a stable, existing entity. But what is actually meant by this term is a dynamic process without metaphysical substance of its own, thus an 'in-between' or *momentum movens* of parts and whole. In this sense, 'PWO', as a concept to be expressed in language, is an ontological metaphor indeed, just by the fact that I can write about it and refer to it in some way. We have to act as if it were a stable entity, whereas in fact it is not and should not be confused with ontological categories such as 'substance', 'essence' or 'being' that have stable and often unequivocal connotations. Thus 'PWO', as a signifier, is

number of such metaphors. In their 2003 afterword to this book, thus 23 years after the original publication, they concede that in fact all metaphors are ontological "in that they create target domain entities" [Johnson et al. 1980: 264]. This means that just by the mere process of mapping from the source domain, a target domain is created that is then conceptualized as an entity in itself, whereas prior to the act of mapping, the content of the target domain had only been locatable in its experiential domain without having the status of something that can be treated as a stable entity in its own right. For the sake of argumentation in this section, I will, however, stick to the original depiction of ontological metaphors.

⁶⁶For this complex ontological metaphor, Johnson and Lakoff provide the following example sentences: "We're still trying to *grind out* the solution to this equation. My mind just isn't *operating* today. Boy, the *wheels are turning* now! I'm a *little rusty* today. We've been working on this problem all day and now *we're running out of steam*." [id.: 27]

⁶⁷Examples are: "Her ego is very *fragile*. You have to *handle him with care* since his wife's death. He *broke* under cross-examination. She is *easily crushed*. The experience *shattered him*. I'm *going to pieces*. His mind *snappped*." [id.: 28]

an ontological metaphor, whereas I think that PWO, as what is signified by the signifier, is not. The main argument why PWO, unlike ‘PWO’, is not an ontological metaphor and therefore not a conceptual metaphor (presupposing that the only conceptual metaphors that come into consideration for ontological investigations are ontological metaphors) is that it can neither be traced back to physical objects, nor to physical containers. Johnson and Lakoff adjudge to physical objects and physical containers the role of constituting ontological metaphors in the sensorimotor domain.

The argument why physical objects cannot serve as a source domain for PWO, however, is straightforward and makes use of the idea of PWO as was disclosed in the course of the second chapter’s analysis of Husserl’s part-whole ontology. Physical objects are material objects and material objects are *qua being material* aggregations of independent pieces, not wholes of dependent moments. Accordingly, mere bodily interaction with physical objects cannot determine an experiential domain in which physical objects are experienced as ontologically dependent on each other. Otherwise we would not readily develop the metaphors of substance and entity out of our interactions with physical objects, which we, however, seem to do according to Johnson and Lakoff. This does not mean that no use of part-whole relations in ordinary language can be conceptual or even ontological metaphor at all. Part-whole metaphors that relate to independent, separable parts are indeed determined by the sensorimotor domain of physical objects and can be mapped into complex metaphorical expressions. For example, the primary metaphor PIECES ARE BROKEN PHYSICAL OBJECTS could give rise to complex expressions like ‘My heart is *shattered*’, ‘We *broke up* yesterday because we could not function as a couple anymore’, ‘This society is *disrupted*, there are gaps *dividing* the people’, or ‘*Piece by piece* she is recovering her health’. Such accumulating or fragmenting conceptions of part-whole (or part-part) relations, however, are not *what is meant* in the characterization of PWO that has been repeated above.

The argument why physical containers cannot serve as a source domain for PWO and therefore do not make PWO an ontological metaphor is less straightforward. *Prima facie* it seems that part-whole relations, even part-whole relations consisting of dependent parts and *even* such relations in the empirical realm of contents where PWO is assumed to be detectable, can be schematized and thus conceptualized with the inside-outside structure that is typical for containers. The prime illustration for this is given in E. Ginsberg’s critical discussion of Husserl’s six propositions that are deductively derived from his axiomatic set of definitions for founding relations (3rd LI, §14)⁶⁸. At this point, it is irrelevant how and why Ginsberg corrects these propositions, but it is revealing how she conceptualizes and visualizes them. She does so by making use of visual container schemata. Let us take Husserl’s second and fourth propositions

⁶⁸Husserl’s set of definitions reads as follows: “If a law of essence means that an *A* cannot as such exist except in a more comprehensive unity which connects it with an *M*, we say that an *A* as such requires foundation by an *M* or also that an *A* as such needs to be supplemented by an *M*. If accordingly *A*₀, *M*₀ are determinate instances of the pure kinds of *A* or *M*, actualized in a single whole, and standing in the relations mentioned, we say that *A*₀ is founded upon *M*₀ and that it is *exclusively* founded on *M*₀, if *A*₀’s need for supplementation is satisfied by *M*₀ alone. This terminology can of course be carried over to the Species, by a quite harmless equivocation. We say further, more indefinitely, two contents or two Species, stand in a foundational relationship or in a relationship of *necessary connection*. This indeed leaves it open which of the two possible but not mutually exclusive relationships is meant. The indefinite expression: *A*₀ requires supplementation by, is founded upon a certain moment, plainly means the same as the expression: ‘*A*₀ is non-independent’.” [Husserl 2001: 25]

as an example, because these propositions concern a dependent part within a dependent whole and therefore come close to the mutual dependency of parts and whole in PWO. This is the second proposition:

“A whole [M⁶⁹] which includes a non-independent ‘moment’ [A], without including, as its part, the supplement [Z] which that ‘moment’ demands, is likewise non-independent, and is so relatively to every superordinate independent whole [N] in which that non-independent ‘moment’ is contained.” [Husserl 2001: 26]

This is the fourth proposition:

“If C [L] is a non-independent part of a whole W [M], it is also a non-independent part of every other whole [N] of which W [M] is a part.” [id.]

Although Ginsberg declares the second and the fourth propositions to be wrong and suggests modifications of them,⁷⁰ she draws the following container schemata (Figures 4-2 and 4-3) that are supposed to illustrate the respective propositions.

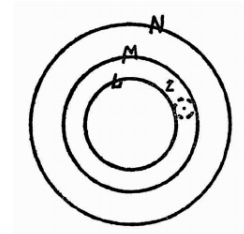
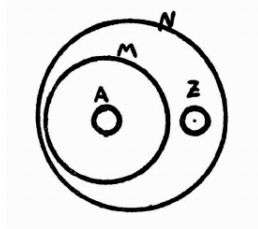


Figure 4-2: *Ginsberg's Second Proposition*⁷¹ Figure 4-3: *Ginsberg's Fourth Proposition*⁷²

She provides similar container schemata for Husserl's first, third, and sixth propositions. These diagrams suggest that part-whole relations, including relations of dependency, could rely on our bodily interactions with physical containers and could therefore be ontological metaphors, provided that Johnson's framework of embodied cognition and cognitive linguistics is applicable. Now we can ask the following three questions:

1. Is PWO an ontological metaphor such that it can be conceptualized by embodied container-reasoning?
2. Are part-whole *dependency* relations ontological metaphors such that they can be conceptualized by embodied container-reasoning?

⁶⁹The letters in brackets refer to Ginsberg's figures 4-2 and 4-3 below.

⁷⁰This is her modification of the second proposition: "Ein Ganzes M, welches ein unselbständiges Moment A ohne die von ihm geforderte Ergänzung Z als Teil einschließt, ist unselbständig relativ zu dem für M unmittelbaren Ganzen N, in welchem die Ergänzung Z mitenthalten ist." [Ginsberg 1929: 113] - 'A whole M, which includes a dependent moment A as a part without A's necessary supplement Z, is dependent relative to N, which is an immediate whole for M and in which the supplement Z is contained.' [own translation] This is her modification of Husserl's fourth proposition: "Ist L ein unselbständiger Teil des Ganzen M, so ist es auch ein unselbständiger Teil jedes anderen Ganzen N, von welchem M ein unselbständiger Teil ist." [id.: 117] - 'If L is a dependent part of the whole M, then L is also a dependent part of every other whole N of which M is a dependent part.' [own translation]

⁷¹Id.: [111].

⁷²Id.: [115].

3. Are part-whole *independency* relations ontological metaphors such that they can be conceptualized by embodied container-reasoning?

As PWO presupposes dependent parts and as dependent parts presuppose independent parts, the denial of (3) would deny (2) and (1), and the denial of (2) would deny (1). But let us begin with (1), thus

ad (1), according to the characterization of PWO given above, a part p is both continuous and discontinuous regarding the whole w that includes p . This means that p is simultaneously dependent and independent of w , i.e. that p is both distinguishable (not separable) from and fused with (not indistinguishable from) w . Thus p 's supplementation must be at the same time inside and outside the w in which p itself is located. In a container, however, either something is inside or outside, but nothing can be inside and outside at the same time. Therefore, PWO is not reducible to container-reasoning and is not an ontological metaphor, because PWO can also be explained by our bodily interactions with physical-material objects. The latter is the case for dependent parts in general, and in addition,

ad (2), dependent parts are also not reducible to container-reasoning, because a physical container implies that there is a boundary, an interior, an exterior and a portal "that allows motion between the Interior and the Exterior." [Dodge et al. 2005: 62] In container-reasoning, parts must, then, be movable from the inside to the outside of the container and vice versa. But dependent parts are not like that. By definition, they cannot be removed from the whole in which they are 'contained'. A container is thus a form of thinking that is overdetermined for dependent parts, because in order to conceptualize dependent parts, only the interior of a whole is required, whether as the foreground or as the background for one or more of its parts. The rest can fall out of the picture. There must be another schema that is more suitable for dependent part-whole relations, and I will look for it in the next section. Moreover,

ad (3), even for *independent* part-whole relations, the sensorimotor interaction with physical containers is problematic as a determinant. We saw that, at least in the Husserlian context, independent parts form a whole only in aggregation. There is thus no whole that holds independent parts together. As I showed in subsection 2.2.5, independent parts instead form a whole by mutual founding relations, 'without external assistance'. It is as if the removal of all containments would make the container itself disappear, like the removal of all grains would make the sandheap disappear. This is not what a physical container implies. It implies that there is a bounded interior even when it is empty, thus, as it were, an empty set that can exist devoid of parts, which is impossible given the fact that parts and wholes are not only terminologically, but principally correlative.⁷³ Besides, it also implies that the boundary is a kind of surface or a demarcation line. The surface or demarcation line of a whole, however, can also be seen as a part of it instead of something the whole has in and for itself, as is the case for a container. A container does not contain its surface, but the boundary of a whole can be

⁷³A similar point is made by Winston et al. in their 1987 article 'A Taxonomy of Part-Whole Relations'. There, the authors argue that meronymic part-whole relations must be distinguished from topological inclusions, i.e. container-contained relations, because what is contained can always be removed. There is no necessary connection between container and contained, whereas in part-whole relations, there is a necessary correlation between part and whole. "In cases of spatial inclusion, the subject is surrounded but is not a part of the thing which surrounds it. Meronymy also normally involves this element of spatial inclusion, for example, the heart is surrounded by the body, but meronymy also involves the additional element of a connection between part and whole." [Winston et al. 1987: 427]

seen as being an independent (e.g. the bark of a tree) or dependent (e.g. the finish of a car) part of the whole.

Ergo, neither is PWO an ontological metaphor, nor are part-whole relations in general identifiable as a container (or an entity) form of thinking. If we want to develop the notion of PWO out of our sensorimotor domain, we have to find another schema for part-whole relations. *It is questionable, however, whether such a schema can give rise to a conceptual metaphor at all.* There are three reasons that motivate this doubt.

Firstly, we saw that in the act of metaphorical mapping, two different experiential domains are connected by the projection of one element from the source domain to the target domain in order to conceptualize, reason about and linguistically express the latter. This is called ‘cross-domain mapping’. Although the thereby supposed heterogeneity of experiential domains for metaphorical mapping has been criticized by some cognitive linguistics,⁷⁴ it is not only proposed by Johnson and Lakoff.⁷⁵ If we look at part-whole relations, however, it is difficult to speak of cross-domain mappings. To justly avoid the ontological separation of mind/body/world, let us assume that our general understanding of parts and wholes is derived from our embodied being in the world (the sensorimotor domain) and the relevant image schema (which, as I just argued, is not the container schema). In the first section of the next chapter, I want to support this assumption by specifying an image schema for part-whole relations. At any rate, it is remarkable that whenever we experience part-whole relations, for example when the dishwasher breaks a wine glass into two pieces, when a partner feels incomplete in a relationship in which the other partner finds completion, or when the smell of popcorn contributes as a quasi-necessary part to our cinematic experience, we do not switch between experiential domains, be they physical (glass), emotional (relationship), aesthetic-gustatory (cinema) or otherwise in nature. *In general, part-whole relations take place within the same experiential domain, domain matrix or similar domain-dimensions.* These are not restricted to space and time, of course. Part of a university, for example, are professors, who are often spread across the world for conferences, and who may have lived several hundred years ago (which makes some chairs quite prestigious). We can perceive, understand and conceptualize part-whole relations without having to draw on a principally different experiential domain. What is more, sometimes it is the experiential domain itself that counts as a whole, for example when I am fully immersed in a (socioculturally dependent) religious practice and the whole of my experience is constituted by parts that (literally) symbolize the meaning of the whole. *Thus, one of the main conditions for metaphorical mappings, namely the cross-domain aspect, does not hold for part-whole relations.*

This is closely connected to a second reason why it is inappropriate to subsume part-whole relations under the category of conceptual metaphors. Since the experiential domains in which part-whole relations generally occur to us are homogeneous rather than heterogeneous, there is no possibility of the source domain falling into oblivion when the target domain is activated. We remember that this “annihilation of the source by the target” [Warren 2006: 17] is often the case with conceptual metaphors. For example, when we utter the complex metaphor ‘time goes by so fast’, we tend to forget that we have made an entity out of time (ontological metaphor), that we attributed an activity and a movement to this entity (which is taken from the sensorimotor domain of our bodies or other objects moving in the world), and that we actually compare two

⁷⁴Cf., also for a bibliographic overview, Barnden [2010: 25].

⁷⁵Cf. Croft [2006: 278] and Ruiz de Mendoza [2014: 144].

or more events (while we conceptualize events as entities) in order to experience the interval between them as ‘short’ (spatial distance).⁷⁶ In part-whole relations, however, it is not possible to factor out the source domain, because these relations are happening in one and the same (set of) experiential domains. Otherwise, there would be no direct correlation between parts and whole, without which, however, it would not make sense to talk about parts and wholes at all. It is just the case that sometimes the whole is prominent, i.e. in the foreground, while at other times one or more parts step out from the background and are highlighted – whether in our perception, in our reasoning, in a trans-subjective situation or as dynamic properties ascribable to objects themselves. In particular for PWO, which is characterized by the shifting of embeddedness and distinctiveness of one or more moments within the whole and of the whole in relation to its moments, it is not possible to ‘annihilate’ either the whole as a source for the moments or the moments as a source for the whole. It is as if both sides constantly merge into and emerge from one another. Besides, and referring to the discussion in chapter 2, this is also why material pieces are not suitable to characterize PWO. The pieces that compose a material object as a whole, for instance the handle h and the bowl b of a coffee cup $c = \{h, b\}$, form sources which are no longer distinguishable from the function and significance of the object (the aggregation, the set) in question. Pieces mostly stand out when they are somehow separated, for example when c breaks into h and b . But then c has ceased to exist and the separated h and b form aggregations in their own right. On the other hand, c ’s moments such as its color(s), motive, immaterial valuableness (we all have a ‘favorite’ cup for some reasons), type of production (hand-made/mass production), or its hygienic condition spontaneously stand out with c as a whole and without being separable from it.

The third reason why ‘PWO’ and *some* part-whole relations, but not PWO and *all* part-whole relations are conceptual metaphors can best be depicted *ex negativo*. If PWO and all part-whole relations were conceptual (primary or complex) metaphors, then there would be no evident reason for the hypothesis that they could involve an ontological, thus most general and omnipresent category or structure of reality. As Johnson, Lakoff and other cognitive linguistics in general show, both our ordinary languages and our cognitive ways of conceptualization consist of innumerable conceptual metaphors. Most of them, in particular primary metaphors, are unconscious,⁷⁷ and for many, including complex metaphors, the source domain is unconscious as well. To this we can add that metaphorical thinking and expressing is unavoidable. “Because metaphorical maps are part of our brains, we will think and speak metaphorically whether we want to or not. Since the mechanism of metaphor is largely unconscious, we will think and speak metaphorically, whether we know it or not.” [Johnson et al. 1980: 257] Thus if there are indeed so many primary metaphors, not to mention complex metaphors, how and why would it be justified to pick out one single kind of conceptual metaphor, part-whole relations with the sub-kind of PWO, and to elaborate on its ontological nature, while so many equally important

⁷⁶Cf. Johnson et al. [1999: 137–169] and Johnson [2010: 407–411] for a detailed discussion of the conceptualization of time in philosophical contexts.

⁷⁷“Primary metaphors arise spontaneously and automatically without our being aware of them. There are hundreds of such primary conceptual metaphors, most of them learned unconsciously and automatically in childhood simply by functioning in the everyday world with a human body and brain. There are primary metaphors for time, causation, events, morality, emotions, and other domains that are central to human thought. Such metaphors also provide a superstructure for our systems of complex metaphorical thought and language.” [Johnson et al. 1980: 256 f.]

others could also be taken account of? If PWO should have a special status as a dynamic interface of part-whole structures that is to be found in our experiential domains, and if we consider ordinary language as an indicator for this special status, then it is in vain to look for conceptual metaphors in which parts and wholes play a role, because this kind of conceptual metaphor is and would be just one among many. Fortunately for the present project, it is not only in conceptual metaphors that we unconsciously as well as consciously reason and express ourselves. Language offers at least one more indicator that indeed points to the special status of part-whole relations and also PWO for our thinking and – in so doing – for the reality we live in: metonymy.

To conclude, PWO is not an ontological metaphor, mainly because part-whole relations are not – or at least not only⁷⁸ – a conceptual metaphor. In order to determine the ontological nature of PWO with the help of ordinary language and in the framework of cognitive linguistics, there are four conditions that have to be fulfilled:

1. To make claims about the ontological nature of something, whether it is a stable entity or a dynamic process, and to determine what could be an ontological category, it is insufficient to remain within the borders of subjectivity and make no claims about reality at all. But somehow we have to take our subjectivity into consideration, because we are embodied and experiencing beings. By arguing against the dichotomies of mind/body/world and by introducing the notion of sensorimotor image schemata, Johnson bridges the gaps between objective reality, bodily experience, neuronal structures and abstract thinking. Above, I tentatively approached image schemata by considering if and how the CONTAINER schema could be constitutive for metaphorical conceptualizations of part-whole relations. However, it became clear that another schema is required. Therefore, in order to connect the notion of part-whole relations and PWO to the world around us (the ‘bottom-up’ approach), we need to find an appropriate image schema for part-whole relations in the next section, 5.1.
2. Metaphorical mapping presupposes two or more different experiential domains. Part-whole relations, however, generally occur within the same or a similar experiential domain. One condition to account for part-whole relations and PWO in experience is to find a conceptual structure that allows for intra-domain instead of cross-domain mapping. This condition, together with the subsequent two, will be taken up in section 5.2.
3. In metaphorical cross-domain mapping, the source domain from which the element comes that helps to conceptualize the target domain is generally factored out. This is the case in particular in what counts as ‘dead’ metaphors, which is a broad field, because a better part of our conceptual metaphors are primary and therefore unconscious. Also, due to our bodies and contingent sociocultural backgrounds, we almost always seem to think and talk in conceptual metaphors. For PWO, however, it is important that there is an active, recognizable relationship between the source and the target within the same experiential domain, such that certain aspects (a whole, one or more parts) of this domain can be in the foreground and in the background, but interchangeably. Thus one condition for

⁷⁸At the end of subsection 5.1.2, I provide some example sentences from cognitive linguists who discuss the PART-WHOLE image schema and illustrate it with both primary and complex conceptual metaphor.

PWO is to maintain intra-domain-stability while allowing for intra-domain-activity. In other words, whereas metaphorical mapping is unidirectional such that the source of the mapping can fall out of the picture once the act of mapping has reached the target, PWO presupposes an active bidirectional mapping between source/target and target/source.

4. The concentration on cognitive linguistics serves to justify the ontological nature of PWO by taking ordinary language seriously. It would be fruitless and therefore insufficient to conclude that part-whole relations, not to mention PWO, is ‘just’ a conceptual metaphor among many others. Why then all this effort to carve out the potential of part-whole relations within the framework of cognitive linguistics? There must be something more to it, and our language should comprise at least one more fundamental semantic feature besides conceptual metaphors that elucidate the ontological nature of PWO better than conceptual metaphors do, even in their special function as ontological metaphors.

The following chapter serves to fulfill these four conditions, first by looking for an image schema for part-whole relations (section 5.1) and then by introducing the notion of conceptual metonymy (5.2) as an equivalent to conceptual metaphor. This equivalent should be more suitable in accounting for part-whole relations in ordinary language and conceptual thinking, which means embodied cognition and the dimension of our ‘enworlded subjectivity’. The latter is the case, because “our own nature is not quite alien to the structure of the world. Positively speaking, the elements and forces that are out there in the world are also present in our body-mind complex, enabling us to adjust ourselves to the environment.” [Balasubramanian 2006: xxi] It has to be added that this more reality-directed point is not always acknowledged by Johnson himself, although his position implicitly invites us to draw ontological conclusions in this way. But as Dreyfus et al. [2015: 94] recently put it, “[t]he idea is deeply wrong that you can give a state description of the agent without any reference to his or her world (or a description of the world qua world without saying a lot about the agent). Such a description would be possible if the knowledge were ‘in’ the ‘subject.’ But it isn’t; the grasp is in the contact, the interaction, and this interaction can’t be described while just talking about the agent.” This is why we should always keep in mind that there is no reason, neither for cognitive linguistics on the one hand nor for philosophical ontologists on the other hand, to disregard cognitive linguistic research as a valid source of data for ontological investigations.

5 Cognitive Linguistics II: Image Schemata and Conceptual Metonymy

5.1 On Image Schemata

5.1.1 What are Image Schemata? Some Questions and Answers

In the previous chapter, I already touched upon the notion of image schemata. The aim of the present subsection is to provide a more explicit depiction of it. Only then can we continue to investigate the connection between ordinary language and part-whole relations, including PWO. In a nutshell, image schemata are hypothetical yet plausible, stable yet dynamic, quantitatively limited yet qualitatively extensible, preconceptual yet conceptualizable, non-representative yet visualizable spatial patterns. These spatial patterns operate on the borderline between our bodies' physical and perceptual interaction with the environment, through which image schemata are constituted, and higher functions of reasoning. The latter are on the one hand unconsciously determined by these basic spatial patterns, but can, on the other hand, consciously 'evaluate' them with a certain amount of imaginative freedom. Image schemata thus serve to bridge the gap between the outside and the inside world, between 'objective' physical causality and 'subjective' freedom of imagination, thereby providing a positive alternative to the claim that there is no mind/body/world dichotomy. Admittedly, this is a very dense characterization of image schemata. It lacks both details and examples. Let us therefore employ the knowledge we have gained so far in this chapter and ask more specific questions about image schemata in a classical Q&A fashion, in the course of which I will provide brief answers by consulting some of the literature on this topic.

How Do Image Schemata Come Into Existence?

The answer to this question, including a useful example, is sketched in one of Johnson's many definitions of image schemata: "An image schema is a recurring, dynamic pattern of our perceptual interactions and motor programs that gives coherence and structure to our experience. The VERTICALITY schema, for instance, emerges from our tendency to employ an UP-DOWN orientation in picking out meaningful structures of our experience. We grasp this structure of verticality repeatedly in thousands of perceptions and activities we experience every day, such as perceiving a tree, our felt sense of standing upright, the activity of climbing stairs, forming a mental image of a flagpole, measuring our children's heights, and experiencing the level of water rising in the bathtub." [Johnson 1987: xiv]

Thus, we start with meaningful experiences which we have for no other reason than the fact of our embodied being in the world. What is experienced is meaningful (what I call above a ‘meaning of’) to us (the ‘meaning for’), because in constantly coping with their environment, our bodies incorporate certain recurring basic patterns through which we can make sense of what is going on around us. These patterns ‘emerge’ through ongoing organism-environment interactions. We do not make image schemata up deliberately; we do not have a meaningful world without being embodied in it; and we do not develop image schemata just by having a body without a pre-existing, experienceable world (as a body/brain in a vat). None of our sensorimotor interactions with the world are unstructured, because image schemata are what can be formulated as the biconditional ‘if-and-only-if’-consequent of sensorimotor interactions as the antecedent.

In more figurative terms, the flow of reality cannot but reach us through structured patterns like the particles observed through a kaleidoscope cannot but appear to us as organized. As such, these particles, like the flow of reality, might actually be an unstructured manifold (I personally believe that this is not the case), but nonetheless they are always experienced as organized and more or less meaningful due to the possibilities our bodies have as organisms in engaging with their respective environment. This is why, in being determined by the sensorimotor domain, the experiential domain is always structured due to the nature and actions of our bodies. VERTICALITY or, for that matter, HORIZONTALITY, are such necessarily emerging meaningful patterns, i.e. such image schemata, that we ‘encounter’ with our bodies and incorporate as emergent patterns of body-world interactions. “They are structures that emerge as part of our meaningful interaction with things ‘outside’ us. They are structures that relate us to energies and forces that we encounter in the ongoing interactive process that constitutes our understanding, our having a world.” [id.: 205]

How Do Image Schemata Exist?

In the perspective of Johnson’s version of cognitive linguistics, image schemata do not exist as objective entities in the outside world, and they do not exist as clear-cut propositions about either the outside world or mental states. However, image schemata do indeed *exist*, namely as the necessary intersection between our sensorimotor interactions and the experiential domain. They are *cognitively real*, because without them, we would not have any understanding, either of the reality in which we live, or of abstract reasoning that relies on image schematic patterns. “To say that a specific image schema [...] *exists* is to say that some of our experiences have a certain recurring structure by which we can understand them. [...] A crucial point here is that understanding is not only a matter of reflection, using finitary propositions, on some preexistent, already determinate experience. Rather, *understanding is the way we ‘have a world,’ the way we experience our world as a comprehensible reality.* Such understanding, therefore, involves *our whole being* [...]. In short, our understanding is our way of ‘being in the world.’” [id.: 102]

Furthermore, although image schemata do not seem to exist in a single person before they emerge by this person’s recurrent bodily interactions with the environment, Johnson does not deny that “there are foregoing apparently inborn aspects of image schemas.” [Johnson et al. 2002: 248] One of these inborn aspects could be the dispositions of our brains to absorb these basic spatial patterns and transform them into dynamic “activation patterns (or ‘contours’) in

human topological neural maps.” [Johnson 2007b: 144] Our brains are thus dispositioned to allow for the existence of image schemata, which, neurologically regarded, are non-representative models. “It [the pattern of an image schema, M.S.] is a *model of* structures of recurring organism-environment coupling, and it is a *model for* possible perceptions and actions that one might experience. Once again, however, it is *not* a model in the sense of a conceptual or propositional construct that we reflectively entertain in some inner mental theater.” [id.: 159]¹

The claim that image schemata really exist and the explanation of how they exist is, among other things, what allows Johnson and Lakoff to label themselves as ‘embodied realists’. This is a position that denies both metaphysical realism (there is an objectively knowable world and we can make literally true propositions about it) and subjective idealism (we cannot know anything about the nature and existence of an outside world).² Finally, the ontological commitment to the existence of image schemata is based on their empirical plausibility, not on their provability. They are thus a well-working hypothetical construct, the existence of which is presupposed.³

How Many Image Schemata Are There?

Image schemata are utterly basic patterns, the amount of which is restricted by our bodily constitution, our perceptual apparatus and the physical as well as spatial dimensions of the world into which we are embedded (‘enworlded’). For this reason, there is only a quantitatively limited number of image schemata. Johnson presents a partially complete list that is supposed to include “most of the more important image schemata.” [Johnson 1987: 126] This list comprises the following schemata: CONTAINER, BLOCKAGE, ENABLEMENT, PATH, CYCLE, PART-WHOLE, FULL-EMPTY, ITERATION, SURFACE, BALANCE, COUNTERFORCE, ATTRACTION, LINK, NEAR-FAR, MERGING, MATCHING, CONTACT, OBJECT, COMPULSION, RESTRAINT REMOVAL, MASS-COUNT, CENTER-PERIPHERY, SCALE, SPLITTING, SUPERIMPOSITION, PROCESS, COLLECTION. In another publication [Johnson 1989b: 115], he additionally lists UP-DOWN, POTENTIAL, RESISTANCE, COMPULSION and SCALARITY, while not mentioning several schemata from the previous list. He remarks that it “might seem as though this list of image schemata could go on indefinitely, like Plato’s problem of whether there are Forms for everything, including hair and dirt. However, the list of basic schemata of this sort is, in fact, relatively small. Many apparently distinct image schemata turn out to be projections on, or elaborations of, more basic schemata.” [id.]

In spite of the limited amount of image schemata, there is no consensus in the literature on this topic concerning their exact number. All lists that are given are explicitly non-exhaustive. As Oakley [2007: 229] states, it is not possible to agree on a definitive number of image

¹Cf. the question ‘Are image schemata visualizable?’ below.

²“Embodied realism, as we understand it, is the view that the locus of experience, meaning, and thought is the ongoing series of embodied organism-environment interactions that constitute our understanding of the world. According to such a view, there is no ultimate separation of mind and body, and we are always ‘in touch’ with our world through our embodied acts and experiences.” [Johnson et al. 2002: 249]

³“When, for example, we say that a construct of cognitive science such as ‘verb’ or ‘concept’ or ‘image schema’ is ‘real,’ we mean the same thing as any scientist means: It is an ontological commitment of a scientific theory and therefore can be used to make predictions and can function in explanations. It is like the physicist’s ontological commitment to ‘energy’ and ‘charge’ as being real. Neither can be directly observed, but both play a crucial role in explanation and prediction. The same can be said of neural computation, conceptual metaphors, prototypes, phonemes, morphemes, verbs, and so on.” [Johnson et al. 1999: 109]

schemata. “At present, I see no widespread agreement on these matters, especially regarding the exact number of image schemas or even regarding the question whether some of the items appearing on Johnson’s authoritative list, such as *ENABLEMENT*, are bona fide image schemas.” Another difficulty for counting image schemata that has already been mentioned in the last quote from Johnson is that some image schemata appear to be reducible to more basic schemata. Johnson subsumes, for example, the relational pairs *FIGURE-GROUND*, *SELF-OTHER*, *HERE-THERE*, *NEAR-FAR*, *TOWARD-AWAY FROM*, *IMPORTANT-UNIMPORTANT* under the more basic schemata *CENTER-PERIPHERY*.⁴ Oakley arrives at the “tentative conclusion that some image schemas are perceptually more primary (e.g. *PATH*), while others suggest a more complex structure [...]” [id.: 230]⁵ Another way of creating a hierarchy that makes it difficult to give an exact number of image schemata is to categorize them, whereby it is then not clear if the category itself should count as a (most basic) image schema or not.⁶

My own conclusion is that the decision on what counts as image schema and what not or even of what is more and what is less basic is not free from a certain amount of arbitrariness. This is not necessarily a disadvantage of this theory, however, as it allows for continuing research and discussion. Still, I assume that there will never be an exhaustive inventory of image schemata with which all researchers on this topic agree. It is more the general idea and some exemplary schemata that seem to matter and might transform their hypothetical status into empirical evidence.

How Do We Come To Know About Image Schemata?

Image schemata are part of the cognitive unconscious and by way of pure phenomenological introspection, it is hard to come to know everything about them. Yet, in order to arrive at a rudimentary understanding of the more apparent image schemata, we can engage in a “reflective interrogation of recurring patterns of our embodied experience. Ask yourself what the most fundamental structures of your perception, object manipulation, and bodily movement are, given that human bodies share several quite specific sensory-motor capacities keyed to the size and constitution of our bodies and to the common characteristics of the different environments we inhabit. Certain obvious patterns immediately jump at you.” [Johnson 2005: 20] Such a ‘folk phenomenology’, however, can never give a systematic picture of image schemata.

In contrast, Johnson’s main method for discovering image schemata consists of empirical linguistic research, through which he also becomes acquainted with conceptual metaphor. “The

⁴Cf. Johnson [1989b: 115].

⁵Cf. for example Peña [1999], who shows how the *FORCE* schema is based upon the *PATH* schema and includes sub-schemata like *COMPULSION*, *BLOCKAGE* and *REMOVAL OF RESTRAINT*, which again include schemata such as *ATTRACTION-REPULSION* and *ENABLEMENT*. Peña argues that there are three types of image schematic subsidiarity: conceptual dependency, logical entailment, and enrichment.

⁶Evans et al. [2006: 190] provide such a categorization of image schemata, with the following categories: *SPACE* (comprising the schemata *UP-DOWN*, *FRONT-BACK*, *LEFT-RIGHT*, *NEAR-FAR*, *CENTER-PERIPHERY*, *CONTACT*, *STRAIGHT*, *VERTICALITY*), *CONTAINMENT* (*CONTAINER*, *IN-OUT*, *SURFACE*, *FULL-EMPTY*, *CONTENT*), *LOCOMOTION* (*MOMENTUM*, *SOURCE-PATH-GOAL*), *BALANCE* (*AXIS BALANCE*, *TWIN-PAN BALANCE*, *POINT BALANCE*, *EQUILIBRIUM*), *FORCE* (*COMPULSION*, *BLOCKAGE*, *COUNTERFORCE*, *DIVERSION*, *REMOVAL OF RESTRAINT*, *ENABLEMENT*, *ATTRACTION*, *RESISTANCE*), *UNITY-MULTIPLICITY* (*MERGING*, *COLLECTION*, *SPLITTING*, *ITERATION*, *PART-WHOLE*, *COUNT-MASS*, *LINKAGE*), *IDENTITY* (*MATCHING*, *SUPERIMPOSITION*), *EXISTENCE* (*REMOVAL*, *BOUNDED SPACE*, *CYCLE*, *OBJECT*, *PROCESS*). Although the authors claim that this list is incomplete, it is the most comprehensive list that I could find in the literature on this topic.

principal sources of evidence for the existence of image schemas and conceptual metaphors are studies of language, although the sources are not limited strictly to linguistic research.” [Johnson 2007b: 184 f.] One of the main types of evidence for the existence of image schemata via linguistic research entails inferential generalizations. Conceptual metaphors and image schemata “generate the inferences we make using metaphorical concepts. For example, falling is an action in which one is out of control. We thus infer that ‘falling in love’ will entail being out of control, being excited, and being scared.” [id.] From the mere fact that our bodies can fall when there are no material impediments (and from recurrent experiences of falling down and avoiding it), we can further infer basic image schemata such as VERTICALITY (UP-DOWN), BLOCKAGE, BALANCE, SURFACE and PATH-GOAL.

What Is the Relation Between Meaning and Image Schemata?

Image schemata are the condition for our ability to make sense of the world around us, thus for enabling the relation between ‘meaning for’ and ‘meaning of’. The enabling of this relationship begins already in the sensorimotor domain and its reciprocation with the experiential domain. Image schemata “are an important part of what makes it possible for our bodily experiences to have meaning for us. The meaning is that of the recurring structures and patterns of our sensorimotor experience. As such, it typically operates beneath the level of our conscious awareness, although it also plays a role in our discrimination of the contours of our bodily orientation and experience.” [Johnson 2007b: 139]

The sensorimotor domain also includes our brain’s interaction with the environment. If we say that image schemata render meaning possible via our bodies, this is also because the brain and the rest of the body are interdependent and because there is no absolute, but only a gradual difference between bodily and neural structures. “An image schema is a neural structure residing in the sensorimotor system that allows us to make sense of what we experience.” [Johnson et al. 2002: 250] However, this bodily aspect may give the wrong impression that image schemata only enable meaning on a bodily level whereby this level would materialistically supersede the mind. Johnson puts it straight that “we must never equate brain with mind. The brain is *not* the mind.” [Johnson 2007b: 175] Neither are image schemata mental forms or categories that we impose on our experiences. “If you treat an image schema as merely an abstract, formal cognitive structure, then you leave out its embodied origin and its arena of operation. On the other hand, if you treat the image schema as nothing but a structure of a bodily (sensorimotor) process, you cannot explain abstract conceptualization and thought. Only when image schemas are seen as structures of sensorimotor experience that can be recruited for abstract conceptualization and reasoning [...] does it become possible to answer the key question: how can abstract concepts emerge from embodied experience without calling upon disembodied mind, autonomous language modules, or pure reason?” [Johnson 2007b: 141]

Thus image schemata, by intersecting body and mind, also enable the meaningful grasping of the experiential domains that relate to more abstract areas of thought. The sensorimotor domain and more abstract mental states, including language, are continuous instead of ontologically separated. This is especially true for propositional meaning (meaning_{prop}) and the complex target domains for many primary metaphors, which then have to be regarded as grounded in the sensorimotor domain of image schemata. Image schemata give rise to ‘higher’

forms of meaning, they “constitute a preverbal and mostly nonconscious, emergent level of meaning.” [id.: 144]

Are Image Schemata Private or Intersubjective?

On the one hand, although we may be predisposed for the acquisition of image schemata, every person has to learn and embody image schemata. This is done at an early stage of development and happens mostly unconsciously. Just like higher forms of reasoning, image schemata are developed by “our embodied activities, such as perception, manipulation of objects, bodily spatial orientation, and movement of our bodies through space. This kind of sensorimotor activity begins before birth, and it is the means by which even the tiniest newborn begins to develop structures of understanding and a sense of self.” [Johnson 1999 : 90]⁷ Hence, the acquisition of image schemata is private in the sense that every person acquires them individually.

On the other hand, since we all have more or less the same bodies and live in physically similar environments, we all develop more or less the same image schemata, which we can always interpret differently, of course, due to our particular experiential domains, our intentions, our knowledge, and our respective metaphorical mappings. “For example, it is hard to imagine any creature with a body similar to ours, located within a gravitational field like the one we inhabit, that would not have some form of verticality schema, some form of balance schema, and some shared schemas of forceful interaction.” [Johnson et al. 2002: 251] Therefore, although image schemata are individually developed, they are intersubjectively shared, which also means that the particular experiential domains interpret or ‘evaluate’ image schemata in varying, often creative ways. If we assume that the semantic structures of our ordinary languages also rely on image schemata, if we take into consideration that ordinary languages are intersubjectively shared (up to the often discussed point that there can be no private language at all), and if we further consider language to be an expression of propositions and concepts, then we can characterize image schemata as “a shared basis of meaning that makes concepts and propositions possible.” [Johnson 1987: 168]

We can also see it like this: image schemata enable meaning for a subject. What is meaningful has to be understood as meaningful by a ‘meaning for’. Understanding, in the context of Johnson’s take on cognitive linguistics, consists of experience, i.e. it involves the experiential domain. And this domain is never complete without a sociocultural background with which we make sense of our experiences, thus of what is meaningful, thus of our image schemata. “To ask about the meaning of something (whether it be an experience, a word, a sentence, a story, or a theory) is to ask about our understanding of it. In short, a theory of meaning is a theory of how we understand things (of whatever sort). And we have seen that this is not merely a matter of how some *individual* might happen to understand something but rather about how an *individual as embedded in a (linguistic) community, a culture, and a historical context* understands.” [id.: 190] Thus image schemata are intersubjectively shared, both for

⁷As an example, Johnson describes how a newborn (human or other animal) incorporates the CENTER-PERIPHERY schema when it “learns to direct its attention toward areas within its visual field and to highlight a figure against a background that fades off into an indefinite perceptual horizon on its periphery. [...] Our perceptual experience, then, always manifests the same recurring schematic structure consisting of a focal center surrounded by a horizon that fades off into indeterminate periphery.” [Johnson 1989b: 112]

bodily and for sociocultural reasons.

Are Image Schemata Internally Structured and Flexible?

On the face of it, it might seem as if image schemata were just skeletal structures consisting of the most simple spatial parameters like UP and DOWN, IN and OUT, PATH and GOAL, NEAR and FAR, CYCLE and LINE, etc. This could give the impression that these parameters were inflexible and simplistic, just “invariant topological structures in various perceptual and motor maps” [Johnson 2005: 19] of our brains and bodies. However, like a skeletal formula in chemistry or a mathematical graph, the simplicity of an image schemata’s parameters might hide the fact that every image schema has an internal logic of its own that makes it analyzable, flexible and extensible.

Firstly, an image schema is not a fixed block of indistinguishable structure, but instead comprises parts and relations. “The parts might consist of a set of entities (such as people, props, events, states, sources, goals). The relations might include causal relations, temporal sequences, part-whole patterns, relative locations, agent-patient structures, or instrumental relations. Normally, however, a given schema will have a small number of parts standing in simple relations.” [Johnson 1987: 28]

Secondly, an image schema never occurs in its pure form, but always in connection with the experiential domain and its respective contents. This accounts for the internal flexibility of an image schema. As Hampe [2005: 2] formulates it, “image schemas are both *internally structured*, i.e., made up of very few related parts, and highly *flexible*. This flexibility becomes manifest in the numerous transformations they undergo in various experiential contexts, all of which are closely related to perceptual (gestalt) principles.”⁸ Thus, “schemata are flexible in that they can take on any number of specific instantiations in varying contexts.” [Johnson 1987: 30]

Thirdly, Johnson emphasizes that image schemata possess an internal logic with which we (mostly unconsciously) reason in our daily lives. He gives the examples of the SOURCE-PATH-GOAL and the CONTAINER schemata. “Consider a case in which you are moving along a linear path toward a destination, and at time T1 you are halfway to the destination. If you then travel farther along the path and reach time T2, you will be closer to your destination at T2 than you were at T1. This is part of the spatial logic of the SOURCE-PATH-GOAL schema. Or consider what follows if your car keys are *in* your hand and you place your hand *in* your pocket. Via the transitive logic of containment, the car keys end up *in* your pocket. Such apparently trivial spatial logic is *not* trivial. On the contrary, it is just such spatial and bodily logic that makes it possible for us to make sense of, and to act intelligently within, our ordinary experience.” [Johnson 2007b: 139]

Fourthly, the internal structure and flexibility of image schemata provide the basis for their extensibility and even combinability. For example, we can extend the SOURCE-PATH-GOAL

⁸For example, even seemingly simple movements from A to B are experientially manifold, because “movements are not defined merely by the internal structure of image schemas, but also by their distinctive *qualities* [the experiential domain, M.S.]. For example, my movement along a forest path is not defined only by the SOURCE-PATH-GOAL structure of my walking. In addition, my movement manifests dynamic qualities - it can be, for example, *explosive*, *graceful*, *halting*, *weak*, or *jerky*.” [Johnson 2007b: 21]

schema by adding subordinate targets⁹ or combine it with the BLOCKAGE schema (e.g. if there are literal or figurative stumbling blocks in your way) or with the COMPULSION schema (e.g. ‘I *have to* go to the dentist today, but I’m scared of it’).

And fifthly, if we see only BLOCKAGES or COMPULSIONS in our way such that the SOURCE-PATH-GOAL schema plays no significant role anymore and is backgrounded, then we can talk of an ‘image schema transformation’, which is a “switch in focus” [Evans et al. 2007: 109] from one image schema to another and which is made possible by the internal structure and logic image schemata exhibit.

What Is the Philosophical Background of Image Schemata?

Although most research in cognitive linguistics, even research on image schemata, does not draw on philosophical subjects such as epistemology, metaphysics or the history of philosophy, Johnson himself makes it explicitly clear that his notion of image schemata is derived from Kant’s epistemological – and in the end (meta-)ontological – question of how our supposedly a priori categories can be applied to a posteriori empirical data. As Johnson concedes: “My notion of the *image schema* is directly influenced by, and is a slight variation on, Kant’s concept of a ‘schema’.” [Johnson 1987: 156] This is not the place to give an adequate explanation or even interpretation of the schematism that Kant develops in the brief yet essential chapter ‘On the schematism of the pure concepts of the understanding’ (A137/B176 – A147/B187) of his *Critique of Pure Reason*. Suffice it to say that Kant determines time to be the commonality or homogeneity of pure concepts of the understanding and the appearances of empirical intuition. What is more important for the present context is that in Kant’s theory, a “schema is in itself only a product of imagination; but since the synthesis of the latter has as its aim not individual intuition but rather only the unity in the determination of sensibility, the schema is to be distinguished from the image.” [Kant 1998: A140/B179]

Both points, the imaginative construction and the difference between a schema and an image, are crucial for Johnson’s adaption of Kant’s schematism. The latter point I will address in the next question. The former point, the imaginative basis of image schemata, is accentuated both in Johnson’s discussion of Kant¹⁰ and his own account of image schemata¹¹. Like Kantian schemata, Johnson’s image schemata are products of imagination, whereby imagination “mediates between sense perception and our more abstractive conceptualizing capacities; it makes

⁹In our daily experience in which we evolve this and all other image schemata, we often deal with subordinate targets. When we structure our daily routines from the morning (source/start) to (path) the evening (goal/destination), for instance, we add several stations (e.g. university, lunch with friends, library, sport course) with countless substations and sub-substations and trajectories in between them. This is also the case for writing a book (chapters, sections, subsections), cooking a meal, repairing a broken object, programming, etc. The image schema SOURCE-PATH-GOAL is only the most abstract pattern, as it were the least common denominator, that structures such activities.

¹⁰“What I have tried to show so far is the absolutely fundamental role Kant attributes to imagination (re-productive and productive) in our ability to have *any* meaningful and connected experience that we can comprehend and reason about. In exploring the workings of the imagination at this most basic level, we are probing the preconceptual level of our experience at which structure and form first emerge for us.” [Johnson 1987: 156]

¹¹“Imagination is our capacity to organize mental representations (especially percepts, images, and image schemata) into meaningful, coherent unities. It thus includes our ability to general novel order.” [id.: 140]

it possible for us to conceptualize various structural aspects of our experience and to formulate propositional descriptions of them.” [Johnson 1987: 194] In my discussion of conceptual metaphors above, I avoided the topic of imagination and instead concentrated on embodiment in order to facilitate the argument, but it should be noted, in the interests of presenting a complete picture, that imagination plays a crucial role in Johnson’s framework.

Another parallel between Kant’s transcendental schemata and Johnson’s image schemata consists in the restrictions both notions provide. Kantian schemata and image schemata are not only a necessary condition for the significance (Kant) or even existence (Johnson) of concepts, but they also restrict the range of concept application and verification to what can be intuited (Kant)¹² or experienced bodily (Johnson)¹³. However, not only does Johnson not engage in the whole philosophical project of Kant’s transcendental idealism, he also more specifically rejects the strict dichotomy Kant makes between categories/forms of intuition and the manifold of empirical sense data, i.e. between the subjective and the objective spheres. “I am thus led to deny that the metaphysical and epistemological dichotomies presupposed by his system are rigid and absolute. I regard them, rather, as poles on a continuum of cognitive structure.” [id.: 170]¹⁴ Although Johnson does not mention it, this disagreement with Kant’s subject-object dichotomy almost necessarily involves the rejection of both the existence of the unknowable thing in itself (*Ding an sich*) on the one hand, as they presuppose an epistemological gap with the world of phenomena, and of a priori, i.e. inborn, categories (*Verstandesbegriffe*) on the other hand, as *all* categories are reducible to image schemata, which are products of our embodied and imaginative being in the world.

Are Image Schemata Visualizable?

In principle, it is possible and helpful to present image schemata by dint of visual diagrams. There are at least three caveats, however, that we have to keep in mind when doing so. The first caveat is closely related to Kant’s distinction between a schema and an image (i.e. a picture, a *Bild*). Whereas an image represents a particular object or concept (e.g. five dots picture the number five; a geometrical drawing of a triangular shape presents a specific class of triangles), a schema is much more general. It should be understood as “a general procedure of the imagination for providing a concept with its image” [Kant 1998: A140/B179] that works “without being restricted to any single particular shape [an] experience offers me or any possible image that I can exhibit *in concreto*.” [id.: A141/B180]. Like Kantian transcendental schemata, image schemata are not to be confused with concrete representations of objects. Johnson makes it clear that “*image schemata are not rich, concrete images or mental pictures, either*. They are structures that organize our mental representations at a level more general and abstract

¹²Kant concludes his discussion of transcendental schemata by stating that “although the schemata of sensibility first realize the categories, yet they likewise also restrict them, i.e., limit them to conditions that lie outside the understanding (namely, in sensibility). Hence the schema is really only the phenomenon, or the sensible concept of an object, in agreement with the category.” [Kant 1998: A146/B186]

¹³“Because of the nature of our bodily experience, there are certain constraints on what we are able to experience and on how we are able to understand that experience.” [Johnson 1989a: 366]

¹⁴Cf. on Johnson’s differentiation from Kant also Johnson [2005: 17]: “I have no interest in defending Kant’s general metaphysical system, which seems to me to be too laden with a disastrous set of fundamental ontological and epistemological dichotomies, such as form vs. matter, mental vs. physical, pure vs. empirical, and cognition vs. emotion. Once such dichotomies are assumed, they create absolute unbridgeable gaps that cannot capture the continuous and multi-dimensional character of our experience and understanding.”

than that at which we form particular mental images.” [Johnson 1987: 23 f.] In other words, image schemata do not represent an object in the external world. Unlike a picture, an image schema “is a flexible pattern of organism-environment interactions, and *not* some inner mental entity that somehow gets hooked up with parts of the external world by a strange relation of ‘reference’.” [Johnson et al. 2002: 250] Therefore, we have to be aware that every visualization of an image schema is not a picture of something else, but, at most, a possible yet inadequate picture of the image schemata thus represented.

The inadequacy of this picture is proven by the second caveat. A visual diagram, at least a printed one, is necessarily static and hence unable to demonstrate the dynamic aspect that is typical for image schemata. The latter “are not mere static ‘representations’ (or ‘snapshots’) of one moment in a topographic neural map. Instead, image schemas operate dynamically in and through time.” [Johnson 2007b: 144] Perhaps a computer simulation would be more appropriate for visualizing image schemata. While static diagrams can only show one ‘frozen’ model of an image schema, a moving simulation could account for their actual flexibility and dynamic fluidity.¹⁵

In any case, there is a third caveat. It is also important to know that image schemata are not supposed to be visual patterns alone, but that they relate to or exist due to all other senses and often are even cross-modal or kinesthetic in nature. Image schemata “are not tied to any single perceptual modality, though our visual schemata seem to predominate” [Johnson 1987: 25] The primary origin of the SOURCE-PATH-GOAL schema, for example, is bodily movement; the CONTAINER schema is mainly evinced by our tactile sense but also by other sense organs,¹⁶ BALANCE is developed by the equilibrium sense within our ears and ATTRACTION can be related to taste, but also to any other sensual organ or cross-modal perception. A visual diagram of an image schema should therefore not imply that image schemata are reducible to sight alone. “Instead, image-schematic concepts are represented in the mind in terms of holistic sensory experiences [...]” [Evans et al. 2006: 184]¹⁷

With these three caveats in mind, knowing that the diagram is only a “distorting image of the actual schema” [id.: 33], it is advantageous to devise visual models for image schemata. The following three diagrams are taken from Johnson [1987: 32; 87; 124]¹⁸ and represent contingent visualizations of the IN-OUT,¹⁹ the EQUILIBRIUM, and the CENTER-PERIPHERY image schemata, respectively:

¹⁵Cf. Oakley [2007: 231 f.] on the problem of visualizing motion in diagrams of image schemata.

¹⁶“Container schemas, like other image schemas, are cross-modal. We can impose a conceptual container schema on a visual scene. We can impose a container schema on something we hear, as when we conceptually separate out one part of a piece of music from another. We can also impose container schemas on our motor movements, as when a baseball coach breaks down a batter’s swing into component parts and discusses what goes on ‘inside’ each part.” [Johnson et al. 1999: 32]

¹⁷Also cf. Lakoff [1987: 271] on the kinesthetic dimension of image schemata.

¹⁸Reproduced with kind permission of Chicago University Press.

¹⁹LM: landmark, TR: trajectory.

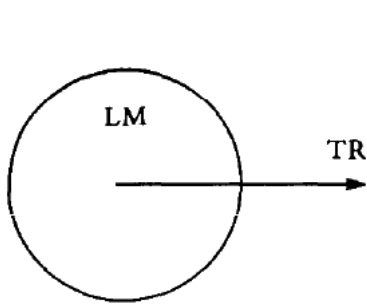


Fig. 5-1: IN-OUT

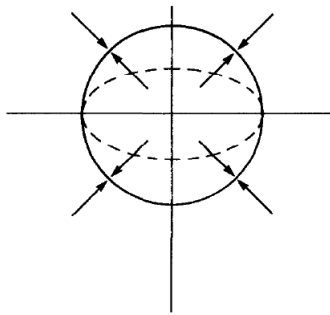


Fig. 5-2: EQUILIBRIUM

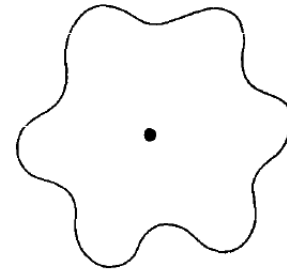


Fig. 5-3: CENTER-PERIPHERY

Johnson points out that he employs “drawings of this sort as aids in the description of particular image schemata. Such diagrams are particularly helpful in identifying the key structural features of the schemata and in illustrating their internal relationships.” [id.: 23] In so doing, we can conclude that the visual diagrams of image schemata share an important feature with visual models in general. They proffer a form of visual cognition that textual explanation alone could not provide. In that they are invaluable ‘aids in the description of particular image schemata’. Their contribution to these descriptions is even unique because, as Spelten [2008: 43] expresses it for visual models in general, “[s]eeing and understanding form a unity that exceeds a purely illustrative nature. Models do not illustrate an explanation, but give a visual explanation. The obtained cognition is itself of a visual nature and cannot be replaced with other forms of explanation.”²⁰ In my opinion, the visualizability of image schemata can be the only non-psychological²¹ justification for using the word ‘image’ to name these basic patterns of experience. However, it is still questionable whether the stem ‘image’ of the compound ‘image schema’ does not lead to too many unwanted connotations and if a more unambiguous name should have been chosen.

Do Image Schemata Only Give Rise to Conceptual Metaphors?

The last question about image schemata that I would like to ask and tentatively answer with the help of the relevant literature concerns the way or ways image schemata relate to ordinary language. This point is particularly important for the investigation of PWO that partly draws on empirical ordinary language analysis as a method for ontological purposes. In the preceding discussion of conceptual metaphor, we have seen that image schemata play a significant role for the formation of primary conceptual metaphors and, consequently, complex conceptual metaphors. Thus, conceptual metaphors “tend to be grounded in common patterns of our

²⁰My own translation. The original reads: “Sehen und Verstehen bilden eine Einheit, die weit über einen illustrativen Charakter hinausgeht. Modelle illustrieren keine Erklärung, sondern geben eine visuelle Erklärung. Die gewonnene Erkenntnis ist dabei selbst visueller Natur und kann nicht durch andere Erklärungsformen ersetzt werden.”

²¹Evans [2007: 106] relates Johnson’s application of ‘image’ to the psychological notion of ‘imagistic experience’: “The term ‘image’ in ‘image schema’ is equivalent to the use of this term in psychology, where ‘imagistic’ experience relates to and derives from our experience of the external world. Another term for this type of experience is sensory experience.” But if ‘imagistic experience’ only relates to and derives from sensory experience (granted that sensory experience is equivalent to our experience of the external world), then I would not regard ‘imagistic experience’ and ‘sensory experience’ as synonymous. Besides, does the term ‘imagistic’ not refer to mental images, and are mental images not exactly what Johnson distinguishes from actual image schemata (first caveat)?

bodily experience that have their own corporeal or spatial logic, which are the bases for most of our abstract conceptualization and inference.” [Johnson 1995: 159] As PWO is not a conceptual metaphor, however, we need to know if there are other linguistic forms which can also be body-based like primary metaphors and, at the same time, abstract like complex metaphors.

On the one hand, if we follow Johnson’s approach to reduce philosophical theories and theorems to the language in which they are formulated and in so doing to conceptual metaphor, it seems as if this reduction also affects every ontological investigation of part-whole relations, including PWO. According to Johnson, “all philosophical theories, no matter what they may claim about themselves, are necessarily metaphoric in nature [and] this is simply a consequence of the fact that the philosophical theories make use of the same conceptual resources that make up ordinary thought.” [Johnson et al. 1999: 345] He even goes so far as to claim that “philosophy would not exist without the systems of conceptual metaphors that define its key ideas.” [Johnson 2007b: 186]

On the other hand, image schemata are preverbal and preconceptual, thus they are not metaphorical in themselves. Granted that they “play a major role in the syntax, semantics, and pragmatics of natural language” [id.: 145], we cannot simply reduce all aspects of natural language and philosophy expressed by language to conceptual metaphor alone. To do so would deprive language of its underlying conceptual diversity. Johnson himself permits at least one more conceptual category that is determined by image schemata (i.e. the sensorimotor domain) and that structures ordinary language as well as abstract reasoning: conceptual metonymy. Conceptual metonymy, the characterization of which I will give in the next section, is a “general cognitive structure” [Johnson 1987: 192] that is “of nearly equal importance with metaphor” [id.]. Contrary to Johnson’s frequent ‘metaphor-only’ claims concerning the nature of philosophy, it seems as if not only metaphor, but also metonymy underlies our abstract domains of reasoning.

The fact that Johnson concentrates on metaphor while casually mentioning metonymy is sometimes confusing, as, for example, when he writes that “our abstract concepts are defined by conceptual metaphor and metonymy. If this is so, then philosophical analysis is primarily metaphor analysis – working out the logic and inferential structure of the metaphors that ground our basic metaphorical understanding of experience. Philosophical theories, like all theoretical constructions, are elaborations of conceptual metaphors. In a very strong sense, philosophy *is* metaphor.” [Johnson 2008: 44] But does he not mention in the beginning of this quote that metonymy likewise defines our abstract concepts? So why are philosophical theories only reducible to conceptual metaphor? Be that as it may, Johnson at least opens up the possibility that image schemata not only give rise to conceptual metaphor, but also to conceptual metonymy. For the present project this means that there is at least one loophole in the dilemma that PWO is supposed to be a philosophical (ontological) notion on the one hand, but not a conceptual metaphor on the other hand. The question is what the particular image schema that gives rise to conceptual metonymy would look like, if we hypothesized that conceptual metonymy is the cognitive structure underlying ordinary language, entailing part-whole relations and PWO.

5.1.2 A Delineation of the PART-WHOLE Image Schema

In the literature of cognitive linguistics and particularly in Johnson, not all image schemata are discussed in equal measure. While the CONTAINER and the SOURCE-PATH-GOAL schemata, for instance, enjoy detailed analyses and examples, the PART-WHOLE schema is somewhat underrepresented, despite its apparent importance for conceptual metonymy. Whereas Johnson himself is remarkably uninformative concerning this particular image schema, Lakoff provides a brief passage about it in his 1987 study *Women, Fire and Dangerous Things*. The first characterization of the PART-WHOLE schema that he gives there corresponds with the first question I asked concerning image schemata in general: Where do they come from, or in this case, how does the PART-WHOLE schema come into existence? Not surprisingly, it is via our ‘bodily experience’: “We are whole beings with parts that we can manipulate. Our entire lives are spent with an awareness of both our wholeness and our parts. We experience our bodies as WHOLES with PARTS. In order to get around in the world, we have to be aware of the PART-WHOLE structure of other objects. In fact, we have evolved so that our basic-level perception can distinguish the fundamental PART-WHOLE structure that we need in order to function in our physical environment.” [Lakoff 1987: 273]

The information given in the first four sentences of this quote is evident, because it is easily verifiable by phenomenological introspection. In addition, the proposition of the final sentence was confirmed prior to Lakoff’s study in a set of experiments conducted by Tversky and Hemenway and published in their 1984 article ‘Objects, Parts, and Categories’. Although Lakoff does not explicitly refer to it, the findings of these experiments reveal that in our constant perception of basic-level (medium-sized, physical, familiar) objects such as chairs, tables, trees or other persons, we have a preference for describing, classifying and distinguishing such objects based on their salient and functional part-whole structures. The authors conclude that “[p]art configuration, we submit, forms the conceptual skeleton underlying and accounting for the convergence of so many different measures at the same level of abstraction. The configuration of parts, or structural description, accounts for the shapes objects may take, thus for our perceptual representations of the appearance of objects. When we interact with objects, our behavior is typically directed towards their parts. Different parts appear to have different functions, or to elicit different behaviors. We sit on the *seat* of a chair and lean against the *back*, we remove the *peel* of a banana, and eat the *pulp*.” [Tversky et al. 1984: 186–7] This perceptual and cognitive dominance of part-whole structures in basic-level objects is neither the case for abstract superordinate objects (e.g. the category ‘chair’), nor for hardly perceivable subordinate objects and categories (e.g. a bar stool as a special kind of chair).²²

In connection with my second question above as to how image schemata (here: the PART-WHOLE schema) exist, Tversky et al. state that part-whole structures are not merely a subjective attribution or imposition of the perceiver, but often reside in the perceived objects themselves to guarantee their functionality.²³ Part-whole structures of basic-level objects are

²²“Basic categories come first, and are based primarily on parts. Then, we form higher-order, superordinate groupings, that are typically based on function, not perception, where function is rather abstractly conceived. At the same time, we also subdivide basic level categories into more specific categories, on the basis of one (or very few) perceptual or functional features. In contrast to basic level categories, both more general and more specific categories do not have a basis in part configuration, nor do they always conform to mutual exclusivity.” [Tversky et al. 1984: 189]

²³“But, parts and function, or parts and behavior seem to be related independent of human users. Thus, the

not the objects themselves. They are not stable and clear-cut entities, but to some extent distinguishable and often necessary features of an entity. How else could we embody, i.e. incorporate such part-whole structures and unconsciously project them into our language and abstract thinking, if they did not exist prior to our bodily cognition of them, and if they did not give a large amount of important information about the world? “Through parts, we link the world of appearance to the realm of action. Through parts, we use structure to comprehend, infer, and predict function. This, then, seems to be the knowledge that makes the basic level the most informative level: the knowledge of function that can be inferred from structure.” [id.: 190] To refer to Lakoff’s characterization, even our own body is such a basic-level object – perhaps the most primary for every perceiver – with what can be called ‘informative functionality’. This is why we can classify the PART-WHOLE image schema as *cognitively real*, because it enables us to understand the functionality, the varying saliences and the differences of basic-level objects in a meaningful way, starting with our own body and continuing with the embodiment and perception of other basic-level entities.

The seventh question above concerned the internal structure of image schemata. The answer to this question entailed every image schema consisting of (1) certain simple parameters, (2) an internal logic based on these parameters, (3) a high degree of flexibility that is related to their experiential contexts, and (4) the possibility of being combined with other image schemata. Let us look at these four points one by one in relation to the PART-WHOLE schema. To begin with (ad 1), after explaining how the part-whole image schema comes into existence, Lakoff continues his characterization of this schema by listing three ‘structural elements’ that function as the parameters of the part-whole schema: “A WHOLE, PARTS, and a CONFIGURATION.” [Lakoff 1987: 273] Furthermore, he formulates what he calls the ‘basic logic’ of the image schema in question (ad 2):

The schema is asymmetric: If *A* is a part of *B*, then *B* is not a part of *A*. It is irreflexive: *A* is not a part of *A*. Moreover, it cannot be the case that the WHOLE exists, while no PARTS of it exist. However, all the PARTS can exist, but still not constitute a WHOLE. If the PARTS exist in the CONFIGURATION, then and only then does the WHOLE exist. It follows that, if the PARTS are destroyed, then the WHOLE is destroyed. If the WHOLE is located at a place *P*, then the PARTS are located at *P*. A typical, but not necessary property: The PARTS are contiguous to one another. [id.]

Taken as such, this ‘basic logic’ covers many instances in which part-whole relations occur and are perceived. Still I think that there are at least two experiential contexts (3) and at least one possibility of combination (4) which indicate that Lakoff’s basic logic of the part-whole schema should be slightly extended. Let us begin with the latter point (ad 4). Lakoff makes the existence of the whole dependent on the existence of the parts and their configuration. F. Santibáñez argues convincingly, however, that it is possible to enrich Lakoff’s basic logic if

leaves and trunk of a tree have different functions for the tree, the legs and trunk of an elephant behave differently and have different functions for the elephant. Because cars are inanimate, we are less likely to talk about the function of the wheels or engine for the car, but we can say that these different parts of the car are associated with different behaviors. So we would like to argue that parts underlie function for human users, but that they are also related to functions or behaviors in a nonteleological sense, regarding the organism or object as a closed, self-contained system.” [id.: 187–8]

we take into consideration that the whole gains a higher amount of independence when the part-whole schema is combined with the CENTER-PERIPHERY schema.²⁴ Then parts that are located in a whole's internal periphery are less important for the existence of the whole than parts that are located in the center of it. For example, a particular house may not exist without walls as central parts, but it may well exist without a garden or basement as peripheral parts; or a functioning human body may exist without fingers, hairs or cecum, but not without heart, head or lung. Thus the configuration of the parts can be roughly subdivided into central and peripheral, which resembles Husserl's distinction between *nearer* and more *remote* parts.²⁵

In Husserl's part-whole ontology, however, this distinction is only relevant for dependent moments and not for independent material pieces. If we transcend the mere spatial sense of central (nearer) and peripheral (more remote) and understand them in a more embracing meaning, then they indicate a hierarchy of *more essential* and *less essential* parts. A part can be more or less essential, for example, in respect of functionality, aesthetic quality, layers of perceptual salience, or conditions of biological survival. To illustrate the latter, the trunk and the roots of an apple tree are more important for the tree's survival than the fruits it produces or its peripheral ramifications. As we have seen in subsection 2.2.6, such hierarchies of significance cannot be found in pieces. Also Santibáñez points to the fact that pieces,²⁶ contrary to moment-like parts, have arbitrary and random boundaries such that peripheral and central are indeterminable, which is why pieces cannot be classified according to their significance for the whole. This is one reason why, as indicated by Santibáñez's demonstration of the combinability of the PART-WHOLE schema with the CENTER-PERIPHERY schema and in connection with Husserl's distinction in this regard, Lakoff's 'basic logic' of the PART-WHOLE schema can be enriched with more independent wholes, because there appear to be two different kinds of part configurations: 'flat' (all parts are of equal value) and 'hierarchical' (with central, i.e. more essential and peripheral, i.e. less essential parts). To be sure, the distinction between central and peripheral parts does not entail the existence of absolutely independent wholes, only of wholes that are relatively less dependent on some of their parts than on others.

Another point of supplementation to Lakoff's basic logic of the PART-WHOLE image schema concerns the experiential context (ad 3) of the configuration parameter. In the last sentence of the 'basic logic' quoted above, Lakoff writes that it is a 'typical, but not necessary property' of a part-configuration that the parts are contiguous to one another. I would like to enlarge upon the notion of contiguity here because it is one of the most discussed characteristics of conceptual

²⁴"Although this [Lakoff's 'basic logic' of the part-whole schema, M.S.] is basically true, it is also true that, by virtue of the CENTRE-PERIPHERY image-schema, the destruction of peripheral parts in the configuration does not necessarily bring about the destruction of the whole." [Santibáñez 2002: 190]

²⁵Cf. subsection 2.2.6.

²⁶It has to be noted that Santibáñez does not draw on Husserl's distinction between moments and pieces, but on Cruse's [1986: 157 ff.] equally notable distinction between parts and pieces. In both distinctions, pieces have vague and random borders (e.g. the shattered pieces of a cup that fell on the ground do not have predefined borders) and are not necessary for the whole's functionality (e.g. the gold rim might flake off the cup but one can still drink from it perfectly well). Husserl, however, characterizes pieces as parts that are independent from the whole in which they occur (e.g. the shattered pieces continue to exist after the destruction of the cup). For Cruse on the other hand, pieces are dependent on the whole (e.g. the shattered pieces of a destroyed cup can only be pieces of this cup because once they were integral constituents of it), while functional parts are not (e.g. the handle of a cup serves to drink from it, but can theoretically be removed and continue to exist as a handle).

metonymy.²⁷ In a strict sense, contiguous means that there is no gap between two parts of a whole. It is true that, in particular with regard to the perceived composition of a physical object, the material parts it is made up of seem to lie immediately next to one another.²⁸ For instance, the glass of a window is contiguous to its frame. If there were to be a gap in between the glass and the frame, then the window would be badly insulated and would appear as a defective or imperfect whole. Also, the particular color of the frame and the transparency of the glass, both taken as moments of the window, can be seen as juxtaposed if there is no third visible moment (another color, for example) in between them. However, Deane [1992: 64] argues that in many cases of part-whole perception, seamless contiguity of parts is only “the limiting case” of what he calls *perceptual adjacency*. “Perceptual adjacency includes but is not the same as contiguity. Perceptual adjacency is more flexible: if no salient percept intervenes between two concepts, then they are perceptually adjacent even if separated by an intervening gap.” [id.] If we take the visual perception of a sequence of Xs as a simple example, we can see that not only the almost contiguous Xs of the row (a) XXXXX, but also the adjacent Xs of the row (b) X X X X X stand out, in configuration, as a perceived whole. Only if an equally salient element such as a number of Ys fills the gaps, like in (c) X Y X Y X Y X Y, do the Xs lose the configuration that otherwise turns them into a perceivable whole.

Furthermore, Deane states that the property of perceptual adjacency not only includes perceptual contiguity, but it also involves perceptual continuity²⁹ as well as temporal stability.³⁰ Thus, whereas all of the Xs in the configuration (d) $\begin{smallmatrix} X & X & X \\ X & X & X \\ X & X & X \end{smallmatrix}$ would form a perceptual whole because the three rows are continuous vertically (and adjacent horizontally), the assembly (e) $\begin{smallmatrix} X & X & X \\ Y & Y & Y \\ X & X & X \end{smallmatrix}$ would not form a perceptual whole of foregrounded Xs because there is no vertical continuity, although there are two horizontal adjacencies of Xs. Neither would there be a perceptual whole if the Xs in (d) were to stay in this configuration only for a split second and then move irregularly in all directions of the visual field. Certainly, we do not look very often at Xs and Ys in our daily lives, but, for example, when we perceive a collection of people on the street as a group (e.g. of tourists, protesters, or pub crawlers), then the whole-character of the group is based, among other factors, on the parts (the single persons) standing or walking close to each other (perceptual adjacency), without being separated by many other people or dominant objects (perceptual continuity) for a noticeable duration of time (temporal stability). Since we often bodily and mentally partake in groups or perceive other configurations of part adjacencies and continuities over time, the conclusion suggests itself that such experiences are indeed constitutive of the PART-WHOLE image schema. The contiguity of parts is therefore as ‘typical’ as their adjacency, continuity, and temporal stability.

²⁷Cf. section 5.2.

²⁸I do not think that the empty space on the atomic level of material objects is constitutive of image schemata, because this extremely subordinate level is far from the basic-level of medium-sized objects that we perceive without auxiliary means and bodily interact with.

²⁹“If a collection of elements forms a configuration, it should be possible to begin at any element in the configuration, proceed step by step among perceptually adjacent elements, and arrive at any other element in the configuration. If two elements are not mutually accessible in this fashion, they do not form a configuration.” [Deane 1992: 64]

³⁰“Parts are not perceived as a whole unless they maintain the same configuration over time. While some changes are possible, they are generally variations in shape or relative distance, and not changes in the pattern of perceptual adjacency among the parts. For example, a flight of birds or a line of fenceposts will easily be perceived as wholes, but more evanescent configurations will simply fail to qualify.” [id.: 65]

It is telling that Deane explicitly invokes the findings of Gestalt theory in order to corroborate his extension of Lakoff's suggested contiguity principle.³¹ Therefore, it would be justified to take into consideration another, perhaps *the* crucial insight of Gestalt theory (about which I will talk in more detail in the next chapter) that I think is equally constitutive for the PART-WHOLE image schema. This insight will enrich Lakoff's 'basic logic' of the part-whole schema with the possibility of finding PWO in experiential contexts (ad 3), which paves the way for, among other things, understanding PWO as an embodied phenomenon that comes into play during many of our bodily interactions with the environment. To do so, we have to address what Lakoff calls the 'asymmetry' and the 'irreflexivity' of the part-whole schema: 'If *A* is a part of *B*, then *B* is not a part of *A*' and '*A* is not a part of *A*'. At first glance, these logical principles seem to be plausible and applicable to all part-whole relations without exception. By definition, a part is a part of a whole, which entails that the whole in question cannot be a part of the part. It seems equally unlikely that something is a part of itself. A page, for example, is a part of a book, but a book is not a part of its page; a book is a part of a library, but the library is not part of the book. And how can a library be a part of itself without mysteriously duplicating itself inside itself, which is rather absurd?

When we look back at the discussion of Husserl's part-whole ontology and the characterization of PWO that followed from it, then we can see that part-whole asymmetry and irreflexivity are true in three of the four distinguished ontological regions. In a conceptual, a priori and formal sense, that includes firstly objective pieces and secondly objective moments, it would be logically, i.e. mereologically,³² inconsistent not to assume part-whole asymmetry and irreflexivity. Thirdly, neither can the whole be regarded as residing in its parts or in itself when we talk about perceptible pieces, because a materially bigger object (a whole) indubitably does not fit into a materially smaller object (one of its pieces) and an object *A* that is completely identical with an object *B* cannot inhabit the same space-time region such that *A* would be part of *B*. However, the characterization of PWO that we arrived at in 2.3 suggests that in the fourth case, i.e. the case of perceptible moments, sometimes a whole can be seen not only as – metaphorically speaking – 'bigger', but also as – metaphorically speaking – 'smaller' than its moments. This is to say that PWO allows for the mereological inconsistency or paradox 'If *A* is a part of *B*, then *B* is and is not a part of *A* such that *B* can be the whole of *A* and *A* can be the whole of *B*'. There is no reason why this should not be the case even when *A* and *B* are, in an immaterial way, identical. I would like to argue that in some cases a perceptible, immaterial whole is not part of its parts because it can be distinguished from them, but it is part of its parts because it finds a certain completion in its parts; its existence is mediated through the existence of its parts and their configuration. Then *A*, or rather what makes *A* be or become *A*, can also be a dependent part of *A* itself, because it is only mediated through its parts that *A* is or becomes *A*. What makes *A* be or become *A* (*A*'s completion, i.e. *A*'s condition for being *A*) is provided by its configured parts, in each of which *A* can be said to exist in a 'contracted',³³ way. This idea will be illustrated as soon as I turn to the visualization of the PWO aspect of the suggested PART-WHOLE image schema shortly.

³¹"These properties are the sort with which Gestalt psychologists were concerned." [id.: 64]

³²Next to transitivity, irreflexivity and asymmetry are two of the three main axioms in contemporary analytic mereology; cf. the relevant discussion in section 3.1 above.

³³Cf. von Kues [2002: II, cap. IV].

What this implies is that a distinctive feature that is essential for the whole's existence must be found in its parts such that the parts' configuration makes the whole distinguishable from yet dependent on this configuration. M. Wertheimer, one of the most eminent figures of early Gestalt theory, writes that the "basic thesis of gestalt theory might be formulated thus: There are contexts in which what is happening to the whole cannot be deduced from the characteristics of the separate pieces³⁴, but conversely; what happens to a part of the whole is, in clear-cut cases, determined by the laws of the inner structure of its whole." [Wertheimer 1944: 311]. In the foreword to this article by Wertheimer, Riezler makes this point more vivid by saying that "the whole breathes in every part." [id.: 306] Since I will talk about Gestalt theory more in the following chapters and since the main way in which image schemata come into existence is by body-environment interactions, let me suggest an exemplary bodily context in which a strict part-whole asymmetry does not seem to be a sufficient principle for a 'basic logic' of the part-whole schema: sport. Sport is one of the most widespread and intensive forms of body-environment interaction, and the aspect of the part-whole image schema that is derived from sporting activity extravagates any clear, asymmetric separation of parts and wholes. Be it in martial arts, where the power of our whole body should be *in* the punch or kick to make them the most efficient; be it in team sports, where every body ideally incorporates the team and its spirit as a whole; or be it in climbing, where the structure of our whole body determines and flows into the constellation of our fingers and feet, which in turn pull our whole body upwards: The body-environment interactions that are characteristic for sporting activity can make us doubt whether all part-whole relations are best thought of as asymmetrical.

In some experiential contexts of embodiment such as sport, but also in the acts of concentration, meditation or interpersonal intimacy, either our whole body *is* as a whole in parts of it in a non-physical way, or a whole beyond our bodies (an idea, a team, a cultural peculiarity, an intersubjective feeling) exists in and via our body as one part of a more embracing whole. We cannot negate such commonsensically known and therefore fundamental experiences for the sake of a consistent and formalizable 'basic logic'. To me it seems unavoidable that these kinds of body-environment interactions are highly influential for the development of the PART-WHOLE image schema, in particular for the flexibility and reversibility³⁵ this image schema provides when it comes to (mereo)logically and materially inconceivable oscillations between parts and whole. In my view, this is also one of the reasons why the PART-WHOLE schema differs from the CONTAINER schema, for which asymmetry (if entity *A* is in container *B*, then *B* cannot be in *A*) and irreflexivity (container *B* does not contain itself) are indeed necessary axioms.

As with any other image schema, it is instructive to visualize the PART-WHOLE schema, although the three caveats discussed in the ninth answer above have to be kept in mind. Firstly, no possible visual model of the PART-WHOLE schema is to be confused with a concrete image, i.e. a picture or representation of a particular object. Secondly, the part-whole schema, in particular when we interpret it with respect to PWO, is dynamical through and through. A necessarily static visual model cannot do justice to the intrinsic dynamics, which is why we have to task our imagination to make the visual model move synthetically from the parts to the whole, analytically from the whole to the parts, or internally among the parts and their configuration.

³⁴Also in the original German, Wertheimer uses the word *Stück* (piece) here, which allows for the interpretative freedom to draw a parallel to Husserl's terminology.

³⁵Cf. section 7.4.

Even then, however, it is, thirdly, important to recognize the fact that part-whole relations not only appear in the visual sphere, but as all kinds of sensations, even kinesthetic ones, like when we have a plate of flavorful food in front of us that consists of different elements (e.g. fish, salad, rice, sauce) with respective ingredients. Then there is one all-encompassing eating experience, consisting of the taste, smell and appearance that are common to all elements, but at the same time there are the elements' and also the elements' respective ingredients' tastes, smells and appearances that compose the whole(s) involved. In just one fork loaded only with the fish, for example, we taste the whole meal *as* and *in* the single fish: Both are distinguishable yet inseparable. A visual model that does justice to these and other perceived part-whole perceptions is merely their most schematic denominator. Nonetheless, such a model helps us to make evident and reflect on the nature of the PART-WHOLE image schema. It can make the fundamental idea visible that is then applicable to a range of concrete cases, also beyond the empirical dimension of visibility.

Unfortunately, in his brief discussion of the part-whole schema, Lakoff does not offer a visual diagram for the part-whole schema. At least with regard to pieces, Santibáñez provides such a diagram for the FRAGMENTATION image schema, which he introduces as a subsidiary kind of the more general PART-WHOLE schema. He describes the schema and its corresponding physical conditions as follows: “The skeletal construct which we put forward corresponds to our common experience that, as a result of an object breaking, its pieces may lie scattered over an area, and also that the pieces may be rearranged in order to bring that object back into existence [...]” [Santibáñez 2002: 192]

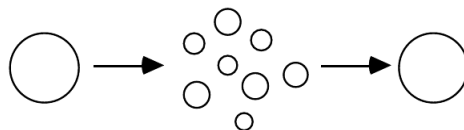


Figure 5-1: FRAGMENTATION³⁶

Indeed, this diagram (Figure 5-1) seems to be suitable for the visualization of part-whole relations with regard to pieces that can be detached from the whole and continue to exist as an entity in itself. However, I would prefer to find a visualization for part-whole structures in which the special nature of distinguishable yet continuous moments is accentuated. Santibáñez himself does not offer such a diagram, perhaps because the one he gives represents his general understanding of image-schematic part-whole relations as being derivable from physical relations³⁷ and applicable via metaphorical cross-domain mappings to abstract objects as well as to the natural domain of moments such as colors or feelings. I will present some of his examples concerning this matter shortly.

A useful hint for the development of a visual diagram for the part-whole image schema can be found in the 2008 paper ‘Representing Part-Whole Relations in Conceptual Modeling: An Empirical Evaluation’ by Shanks et al. This paper does not directly address the notion of image

³⁶Reproduced from Santibáñez [2002: 192], with kind permission from J. Camilo Conde Silvestre, the general editor of the journal *Atlantis*.

³⁷“The physical arrangement of functionally specialized parts into a configuration is mapped onto the structure of abstract entities, which allows us to speak and reason about them. [...] Thus, by making use of the functionally relevant notion of ‘part’, it is possible to speak and reason about taking a complex object to pieces that may later be put together again. Part decomposition may provide useful insights into the functioning of the properly constituted whole.” [Santibáñez 2002: 191]

schemata, but it compares and evaluates two different approaches towards the visualization of part-whole relations: ‘relationship-based’ and ‘entity-based’. The authors claim that a visual diagram of part-whole relations, in which at least two components form a composite due to a certain commonality, can either display this commonality as a relationship (an association between the elements) or as an entity (a class under which the elements fall). For example, the situation that there is a ‘committee’ (the composite) in which both the ‘faculty’ as a component and a ‘grad student’ as a further component are members, is visualizable either by displaying the ‘committee’ as a relationship between ‘faculty’ and ‘grad student’,



or by accentuating the membership as an entity in its own right.



Although the authors admit that the latter approach “is *syntactically* more complex because it contains more elements” [Id.: 569], they give a number of reasons why it is preferable. All of these reasons are based on a principle they call, by drawing on a previous study on the representation of relationships,³⁹ ‘ontological clarity’. I think that this principle is a useful hint for the suggestion of a visual diagram for the PART-WHOLE image schema. Ontological clarity “is achieved only when the mapping between a set of conceptual modeling constructs and a set of ontological constructs is isomorphic.” [id.: 557] This simply means that the visual model (the ‘conceptual modeling constructs’) should conform with the data (the ‘set of ontological constructs’) that it wants to be a model of as well as possible. Now, there are four situations that could prevent such a conformity: construct overload,⁴⁰ construct redundancy,⁴¹ construct deficit,⁴² and construct excess.⁴³

The authors argue that relationship-based visual part-whole models fall prey to the first unwanted situation, because here “a single modeling construct is used to represent two ontological constructs (a mutual property and a composite). As a result, ontological clarity is undermined, and [...] users of a conceptual model will have greater difficulty understanding the semantics of the real-world domain represented by the model.” [id.] Thus, the first figure is ambiguous in whether ‘committee’ is a mutual property of ‘faculty’ and ‘grad student’, or a relationship between them, or even a complex entity in itself (perhaps with its own properties?) of which the other two are members. The entity-based model avoids such confusion, although its syntax is richer. On the one hand, I do not think that either of these models are suitable when it comes to the PART-WHOLE image schema, where embodied and preconceptual experience plays a greater role than the modeling of entities and relations which are already conceptually present. After all, the authors note that their approach, including the criterion of ontological clarity, is “rooted in computational and algorithmic theories rather than *neurophysiological* theories of human visual object recognition systems” [id.] Also, if we think away the descriptive

³⁸Cf. for the original diagrams Shanks et al. 2008: 556.

³⁹Cf. Wand et al. [1999].

⁴⁰“A single modeling construct maps to two or more ontological sources.” [Shanks et al. 2008: 557]

⁴¹“Two or more modeling constructs map to a single ontological construct.” [id.]

⁴²“An ontological construct exists that is not the image of a mapping from any modeling construct.” [id.]

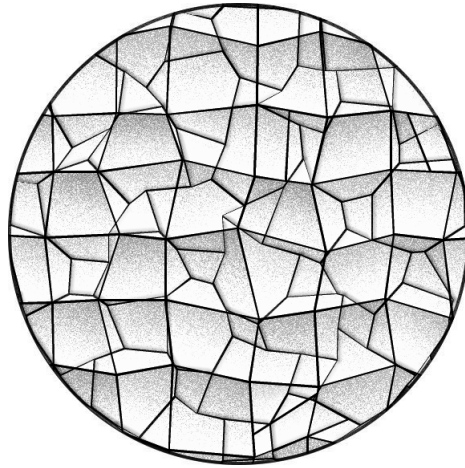
⁴³“A modeling construct does not map onto any ontological construct.” [id.]

text in both models and thus make them more generally applicable, it ceases to be evident that part-whole structures are modeled and not, for example, a hierarchical taxonomy. On the other hand, as image schemata are not merely abstract patterns but also fundamental structures of our enworlded and embodied experiences, I think that the notion of ‘ontological clarity’ can help us to find a possible visual model for the PART-WHOLE image schema.

The two approaches just discussed teach us that a visual model for the PART-WHOLE schema should neither be a model of detachable pieces alone, because then the important idea of undetachable moments is underrepresented, nor should the model be based on a conceptual algorithm that is – in a cognitive linguistic framework – a later product of embodied body-world interactions. We should indeed aim for ‘ontological clarity’, but rather by ensuring that the visual model of the PART-WHOLE schema stands as close to our embodied experience of the relation between parts (pieces as well as moments) and their whole or aggregation. Let me therefore suggest a visual model that I think captures and depicts the essential thought behind both physical and empirically perceived, even phenomenologically experienced part-whole structures. This visual model is nothing but a simplified mosaic. Mosaics are part-whole formations in which both the arrangement of material pieces and the combination of colors (here expressed as darker shades that transcend single pieces) and aesthetic forms contribute to the perceptual meaning ($\text{meaning}_{\text{perc}}$) of the whole. At the same time, if the $\text{meaning}_{\text{perc}}$ of the whole did not co-exist with the configuration of the parts or if it did not jump out as being meaningful at all, then we could not grasp the meaning of the parts or arrange them, in the context of human-made artifacts, properly. The fundamental thought of a mosaic, since ancient times a recurring and still fascinating form of art, expresses many part-whole experiences beyond the realm of art proper. It captures the idea that a whole is meaningful both *although* and *because* it is composed of parts. These are either separable from the whole (in the case of material pieces) or receive their singularity or even existence from it (in the case immaterial moments). Only in the first case, is it the addition of pieces that makes up the material whole as an aggregation.⁴⁴ In the second case, due to their shades and aesthetic forms, the moments flow into each other and are thus incomplete in isolation.⁴⁵ The visualized PART-WHOLE image schema below (Figure 5-2) also illustrates how the whole (the circle) depends on each of its moments, without which the circle would either be broken (if a part of the border is removed) or at least be deprived of its expressiveness and internal structure (if a part of the general surface is missing).

⁴⁴This is probably why some prominent Gestalt theorists refer to mosaics with the claim that these would represent the summative nature of stimuli instead of the supra-summative nature of Gestalt percepts. Cf. Wertheimer [1922: 48], Koffka [1925: 511], Köhler [1920: xviii; 1925: 706, 711; 1975: 162] and Metzger [2001: 260].

⁴⁵Some contemporary scholars working in the Gestalt tradition elaborate on this equally relevant aspect of mosaics. Cf. Wade [2004; 2012] and Piccolino et al. [2006a; 2006b].

Figure 5-2: *Mosaic PART-WHOLE Image Schema*

Furthermore, the mosaic-like PART-WHOLE image schema visualizes important aspects of Lakoff's 'basic logic', in due consideration of the three extensions discussed above. It symbolizes asymmetry (none of the parts have the round shape of the whole as part) and irreflexivity (neither the whole nor the parts have themselves as parts). It shows that there would not be a whole if *all* of the pieces were removed, although the removal of pieces from locations that are peripheral for the meaning of the whole as a circle, such as pieces from the middle or smaller pieces on the margin that comprise the circle line, would leave our Gestalt perception of the circle as a whole intact. Moreover, the parts of a mosaic can be either completely contiguous or just adjacent for the whole to have meaning. The necessary continuity of the parts is displayed by their transeunt distribution of hues, and the temporal stability of a mosaic is another condition required for it to be a meaningful object. Many daily experiences correspond to the basic structure of a mosaic, such as the feeling of belonging somewhere, of perceiving order and disorder (as well as order in disorder and disorder in order), of listening to a song or reading a story, of understanding that and how the most heterogeneous parts can contribute to a well-functioning whole (e.g. in a democracy or a society in general), or of the insight that any organism, including our own body, functions as a whole that depends on some of its parts while others can be replaced (transplanted) or have to be segregated. Thus I think that the schematic form of a mosaic, of which the one in Figure 5-2 is just an example that should not be confused with a concrete picture, does indeed provide the 'ontological clarity' that accounts for the isomorphism between a visual model and the world we constantly and bodily interact with.

As a further benefit of the mosaic-like model, a slight adaptation of it is sufficient to include the occurrence of PWO to result in the special case of a PART-WHOLE_{pwo} image schema. As it stands, this model is able to account for the asymmetry and irreflexivity of many part-whole relations. However, we saw that in PWO there is this mereologically paradoxical situation that a whole is somehow contained in its parts for the whole to find completion, i.e. to exist as a whole. This circumstance violates the principles of asymmetry (the whole is not a part of its parts) and irreflexivity (the whole / a part is not part of itself). What may sound paradoxical at first glance is easily solved and visualized by a variation of the mosaic-like model to a similar model that includes self-similarity. Self-similarity is the rather new mathematical idea that the fragmentation of an entity (a fractal) yields parts that display structural features of the entity on

a smaller scale. To ‘zoom’ in on an entity that is determined as a whole reveals either identical or quasi similar iterations of the whole in all of its parts. This phenomenon is also called ‘scale invariance’, because the basic pattern of the entity comes to the foreground on every scale. In theory, this iteration may go on infinitely, like moving in a loop. The idea of mathematical fractals can also be found in natural phenomena such as coastlines and logarithmic spirals (i.e. J. Bernoulli’s *spira mirabilis*), clouds or galaxies,⁴⁶ in works of art as the idea of *mise en abyme* (also known as the Droste effect), or – as I indicated above – in bodily experiences such as sport, in which our whole body has to be non-physically present in and expressed by a part of it. Of course, a material/physical piece cannot contain itself as a part or be part of one of its parts. But when we look at moments and take them as structural phenomena like a repeatable pattern or the concentration of something to a particular point of it, analogously to the idea of recurring and slightly variable themes in musical compositions, then we can see that the notion of PWO, which is principally about moments, can be visualized as a model of self-similarity. The more general mosaic-like visualization of the PART-WHOLE image schema that I suggested above forms a perfect ground for this visualization of PWO as a contingent yet significant aspect of this image schema; an aspect that has its own experiential, natural and mathematical basis and that could provide an alternative to the principles of asymmetry and irreflexivity. Perhaps the famous Sierpinski triangle (Figure 5-3) is the most schematic visualization of fractals. It also has a mosaic-like form, which is why it can serve as a visual model for the PART-WHOLE_{pwo} image schema. Of course, the movement of scaling has to be imagined, as fractals are essentially dynamic and should be presented as such.



Figure 5-3: *Sierpinski Triangle (Fractal PART-WHOLE image schema)*⁴⁷

To conclude the delineation of the PART-WHOLE image schema, I would like to refer to the tenth question I asked above concerning image schemata in general: Does the PART-WHOLE schema only lead to conceptual metaphor? Does it lead to conceptual metaphor at all? It is true that towards the end of subsection 4.2.4, I had some doubts about the general possibility of reducing *any* conceptual metaphor to part-whole relations, firstly because there is always *one* experiential domain in which part-whole relations are experienced whereas conceptual metaphor, by definition, involves multiple experiential domains. Secondly, due to the correlativity of parts and whole and due to the common experiential domain in which they occur, it is unlikely for either the parts or the whole to fall into cognitive oblivion, while it is a typical feature of conceptual metaphor that the source domain is forgotten when the target domain is activated. The third reason consisted in the intuition that if *all* part-whole relations were to lead to conceptual metaphor alone, then there would be no justification for singling out this kind of relation in particular, with its special case of PWO, and determining the latter’s ontological nature. In the end it appeared that part-whole relations are neither what Johnson and Lakoff describe as an

⁴⁶Cf. Falconer [2013] for these examples and a general introduction into this topic.

⁴⁷This figure is taken from the Wikipedia entry ‘Sierpinski triangle’ (https://www.wikipedia.com/en/Sierpinski_triangle (last visited on 7 December 2019)).

ontological metaphor, nor do they correspond to the CONTAINER image schema, which seemed to be the most connatural image schema for part-whole relations previous to the discussion of the proper PART-WHOLE image schema. Nonetheless, perhaps the strong conclusion that part-whole relations do not lead to *any* conceptual metaphor was too premature, while, in the face of the now delineated part-whole image schema, the more cautious conclusion that part-whole relations do *not only* lead to conceptual metaphor seems more appropriate.

The illustrations or ‘sample metaphors’ of this image schema in Lakoff’s original discussion of it are set out to demonstrate that the embodied experience of part-whole relations in which the image schema is developed can be mapped into experiential domains that are quite heterogeneous to the direct perception of body and world. Lakoff provides examples of three such experiential domains: families,⁴⁸ the Indian caste system,⁴⁹ and the abstract form of thought that is a ‘structure’.⁵⁰ It must be admitted that although Lakoff’s ‘basic logic’ of the PART-WHOLE image schema rather seems to focus on the notion of an detachable piece, which is only part of what ‘part’ does entail, these three examples allow for an application of the image schema in question to conceptual metaphors that describe experiential domains in which the parts, although distinguishable, are *grosso modo* not detachable from their whole. Certainly, you can split up in a marriage, but you cannot choose not to be a child or a sibling of another family member once this relationship has been biologically established. In the same manner, it is (with the exception of converting to another religion) just about impossible to abandon the Hindu caste into which one is born, which means that a caste member is rather a moment than a piece of the whole. In addition, a ‘structure’, although it is one of the most plurivalent, vague and therefore almost variable-like notions I can think of, comprises the idea that what is part of a structure has a certain function, not only a function for the functioning of the structure, but also for itself to function as (and oftentimes only as) a function.⁵¹ This is certainly true for Lakoff’s example of structural isomorphism, where the meaning of the parts depends on their configuration to the whole.

Thus, granted that these examples cover the notion of dependent parts and granted that they are derived from the sensorimotor domain in which the PART-WHOLE image schema is constituted via body-environment interactions, we can still ask whether these examples really refer to conceptual metaphors. To me it seems that in the case of family relations, which is an experiential domain into which we are either born or with which we are at least pre-conceptually familiar from early childhood on, it is not implausible to remain on the level of the *constitution* of the PART-WHOLE image schema. This is because of the fact that, long before our capacity of mapping and thinking is developed, our bodies are born into a family of

⁴⁸“Families (and other social organizations) are understood as wholes with parts. For example, marriage is understood as the creation of a family (a whole) with the spouses as parts. Divorce is thus viewed as *splitting up*.” [Lakoff 1987: 273–4]

⁴⁹“In India, society is conceived of as a body (the whole) with castes as parts – the highest caste being the head and the lowest cast being the feet. The caste structure is understood as being structured metaphorically according to the configuration of the body. Thus, it is believed (by those who believe the metaphor) that the maintenance of the caste structure (the configuration) is necessary to the preservation of society (the whole).” [id.: 274]

⁵⁰“The general concept of structure itself is a metaphorical projection of the CONFIGURATION aspect of PART-WHOLE structure. When we understand two things as being *isomorphic*, we mean that their parts stand in the same configuration to the whole.” [id.]

⁵¹Cf. Rombach [1988: 25–44].

which we are part, which is no less a primarily unconscious body-environment interaction than the fact that we “experience our bodies as WHOLES with PARTS” [Lakoff 1987: 273] and that we perceive basic-level objects. Furthermore, the Indian caste system, into which one is born depending on the sociocultural background, is not an experiential domain that is different from the human body. There is no cross-domain mapping from the body as a source to the caste hierarchy as a target. Rather, the part-whole relations of body and caste are connected within the same experiential domain, not only because the latter receives its religious legitimization by the self-destruction of Purusha into four body parts as is passed down in the relevant *puruṣa sūkta* of the *Rigveda*, but also because the four *varna* castes metonymically *stand for* these body parts. The castes are not to be understood as a metaphor of Purusha’s body parts, i.e. the former do not stand in an implicit *as-if* or *is-like* relation to the latter, such that the experiential domain of the religious origin does not play a role anymore. The castes, as target, are rather in a metonymical *stand-for* relation with the source that is or should be co-present with the target. We will see in a second how conceptual metonymy differs from conceptual metaphor in this respect. And finally, a structure, depending on its definition, can indeed be an abstract concept that is derivable from the PART-WHOLE image schema. But a ‘structure’, at least in a purely formal sense, is not an experiential domain on its own. On second thoughts, to me it seems to be rather a heuristic tool that might originate in our sensorimotor domain, but that is just as suited to ‘evaluating’ this domain as it is to understanding any other domain. ‘Part’ and ‘whole’ are just two of the many elements that can play a heuristic role when we structure an experiential domain or when we perceive or conceptualize an experiential domain as a structure. For these reasons, I cannot conclude that ‘structure’ is a conceptual metaphor. It is rather a means to describe conceptual metaphors and their underlying experiential domains; a means that includes part-whole relations but also other notions such as hierarchy, movement, or consistency.

Apart from these remarks, however, Lakoff’s examples are instructive, because they are not only concerned with the notion of dependent parts, but also point towards the significance of conceptual metonymy as an alternative route the PART-WHOLE image schema leads us to. Certainly, it would have been easier for Lakoff to provide examples for conceptual metaphors that are exclusively based on the notion of independent parts. It is one of the merits of the paper by Santibáñez mentioned above that it shows convincingly how the PART-WHOLE image schema, provided that we understand parts solely as detachable pieces, does indeed allocate conceptual metaphors for domains that differ from the bodily one in which this image schema is constituted. ‘Part decomposition’, as he calls it, can be expressed in sentences referring to material objects,⁵² abstract theories,⁵³ descriptions of color perceptions,⁵⁴ and – in the

⁵²E.g. “I was always very interested in how things operated and used to *take them apart* to see how they worked, but I was not so good at *putting them back together* again.” [Santibáñez 2002: 191]

⁵³E.g. “...more radical feminist theories (such as those of Daly or Irigaray) which criticise and *take apart* the metaphysical implications inherent in philosophical conceptions of the subject.” [id.]

⁵⁴E.g.: “Sensations of white, for instance, are classed together, not because we can *take them to pieces*, and say they are alike in this, and not alike in that, but because we feel them to be alike altogether, though in different degrees.” [id.: 192]

special case of the FRAGMENTATION schema he discusses – to feelings,⁵⁵ values⁵⁶ and ideals⁵⁷. Although Santibáñez shows that in some cases in which the PART-WHOLE schema, interpreted as a ‘PIECE-WHOLE’ schema, is mapped into abstract experiential domains, the whole does not cease to exist when the parts are removed,⁵⁸ he is much less concerned with the notion of dependent parts, the existence of which presupposes the existence of the whole and vice versa. However, he demonstrates that my former doubts about the possibility of mapping part-whole relations as conceptual metaphors into different experiential domains were not justified when it comes to independent parts, because in this case we indeed employ a plenitude of metaphors to express all kinds of experiential domains.

In conclusion, image schemata are basic, cognitive patterns that come into existence through recurrent body-environment interactions. They enable us to understand the world around us as inherently meaningful and they open up the possibility for abstract thinking, conceptual metaphors and – as we shall see – conceptual metonymies. This is also the case for the PART-WHOLE image schema. As Lakoff points out, we develop this image schema through the possibility of manipulating and being aware of our body parts, as well as through our empirical perception of basic-level objects. Like the other image schemata, the PART-WHOLE schema also has an internal structure, i.e. it has a set of parameters (a WHOLE, PARTS, a CONFIGURATION of the parts), an internal logic (of which asymmetry, irreflexivity, whole-dependency, local identity between parts and wholes, and contiguity are sufficient but not necessary features), a high degree of experiential flexibility (e.g. perceptual adjacency, temporal stability, specific PWO experiences of whole-in-part), and the possibility of being combined with other image schemata (e.g. with the CENTER-PERIPHERY schema). Furthermore, and although there are a number of caveats that hold for all image schemata, it is heuristically useful to visualize the PART-WHOLE image schema. After discussing two possibilities from other scholars, one that accentuates independent parts and one that is intended for conceptual reasoning, I suggested and argued for a visual model that is inspired by the mosaic-structure found in artworks. For the sake of modeling, this structure has to be displayed in the simplest way. However, I presented a slightly more elaborated figure in order to make clear how such a visual model can combine both dependent and independent parts. As a further benefit, the mosaic-structure is able to account for the possibility of integrating PWO into the PART-WHOLE image schema by turning the mosaic into a fractal in which there is a constant (quasi) iteration or (quasi) self-similarity of the whole’s basic structure in each of its parts. In so doing, a whole can be part of itself as well as part of its parts without losing its status as a whole, which is one of the – (mereo)logically paradoxical – characteristics of PWO. Finally, I showed that the PART-WHOLE image schema can indeed lead to conceptual metaphor, but mainly in the case of independent parts. For dependent parts (moments), on which the notion of PWO hinges, there must be an alternative route into ordinary language. This route, I hypothesize for now, is entitled ‘conceptual metonymy’, and it is to this route that we must now turn in order to conclude this chapter

⁵⁵E.g. “She felt as though she was dying, as though her heart was being *ripped piece by piece into shreds*, but she had to go on and finish the programme.” [id.: 194]

⁵⁶E.g. “As the credibility of the DLV *lay in shreds*, the greater consequences for world sport were being considered by, among others, Norbert Laurens, the lawyer for the DLV.” [id.: 193]

⁵⁷E.g. “Mrs Margaret Thatcher has struck three notes since the Communist world began to *disintegrate*.”

⁵⁸E.g. in the sentence “My mother, I’m afraid, *went quite to pieces* after his death.” [id.: 194], the mother as a whole continues to exist although metaphorically she *went to pieces*.

on ordinary language analysis as a method for our investigation into the ontological nature of PWO.

5.2 On Conceptual Metonymy

The idea of understanding metaphor and metonymy not only as purely linguistic tropes but more holistically as embodied, cognitive phenomena with correspondent image schemata stems from Johnson and Lakoff's influential 1980 book *Metaphors we live by*. This idea heralded a turn in cognitive linguistic research.⁵⁹ However, Johnson and Lakoff's research, both in their groundbreaking book and later on, concentrates for the most part on conceptual metaphor and its implications for philosophy and other fields. Conceptual metonymy, although it is regarded by Johnson as having "nearly equal importance with metaphor" [Johnson 1987: 192] and although also "metonymic concepts are grounded in our experience" [Johnson et al. 1980: 39], has not enjoyed such systematic and extensive research as conceptual metaphor did. Nonetheless, there are some crucial passages in *Metaphors we live by* that not only provide valuable characterizations of conceptual metonymy by comparing it to conceptual metaphor, but that also have led to subsequent research on this topic by other scholars.

First of all, however, we have to ask: What is metonymy? In the first book-length study on metonymy, that was nota bene published only recently, Littlemore [2015: 4] defines metonymy as follows: "Metonymy is a figure of language and thought in which one entity is used to refer to, or in cognitive linguistic terms 'provide access to', another entity to which it is somehow related. [...] In a very basic sense, therefore, metonymy is a process which allows us to use one well-understood aspect of something to stand for the thing as a whole, or for some other aspect of it, or for something to which it is very closely related." In this brief description, Littlemore addresses at least three defining features of conceptual metonymy that were first touched on by Johnson and Lakoff and then discussed in more detail in the following literature on this subject matter by other scholars: (1) conceptual metonymy as a *stand-for* relation, in contrast to conceptual metaphor as an *is-like* relation, (2) the experiential homogeneity of source and target, in contrast to the heterogeneity of experiential domains in conceptual metaphor, and (3) the cognitive aspect of 'providing access to' the target by co-activating source and target, in contrast to conceptual metaphor's characteristic of losing sight of the source domain once the act of mapping is accomplished. After I have shown how these three topics are touched upon in Johnson and Lakoff's early research, I will discuss them in more detail in the subsequent subsections (5.2.1 – 5.2.3) one by one. Then I will look at how conceptual metonymy relates to the associated notion of synecdoche (5.2.4), before I conclude that conceptual metonymy is the cognitive and linguistic field where we find empirical evidence for the ontological nature of PWO as, among other things, a cognitive phenomenon that exists in ordinary language (5.3).

Ad 1) In order to illustrate the *stand-for* relation that is typical for metonymy and that makes metonymy differ from metaphor, Johnson and Lakoff [1980: 35] provide a set of example sentences:

"He likes to read the *Marquis de Sade*. (= the writings of the marquis)

He's in *dance*. (= the dancing profession)

⁵⁹Cf. Nerlich [2010: 297].

Acrylic has taken over the art world (= the use of acrylic paint)

The *Times* hasn't arrived at the press conference yet. (= the reporter from the *Times*).

Mrs. Grundy frowns on *blue jeans*. (= the wearing of blue jeans)

New windshield wipers will satisfy him. (= the state of having new wipers)"

Our everyday language is full of metonymic *stand-for* relations like the ones in these example sentences, where "one entity is being used to refer to another. Metaphor and metonymy are different *kinds* of processes. Metaphor is principally a way of conceiving one thing in terms of another, and its primary function is understanding. Metonymy, on the other hand, has primarily a referential function, that is, it allows us to use one entity to *stand for* another." [id.: 36] We have already discussed the aspect of metaphor as 'a way of conceiving one thing in terms of another' by attributing the idea of *similarity* to the notion of conceptual metaphor.⁶⁰ This means that when there is an experiential domain for which we do not have literal words or concepts to describe it, we map words or concepts that correspond to another, more basic experiential domain into the target domain on grounds of a similarity of the thus mapped element. We then conceive the missing element of the target domain in terms of the available and similar element of the source domain, but without thereby assuming a *general similarity* of target and source domain. This is different in the case of conceptual metonymy. What is *similarity* for conceptual metaphor, is *contiguity* for conceptual metonymy. *Contiguity*, which is one of the essential features of the PART-WHOLE image schema that is then enriched with a particular experiential domain, means that within one and the same experiential domain, there is an element *E* that is so closely related to another element *E'* in this domain or to the domain as a whole *D* such that we can substitute *D* or *E'* for *E* and still understand that actually *D* or *E'* is meant.

Ad 2) This difference between *similarity* (*is-like*) and *contiguity* (*stand-for*) leads us to the second important distinguishing feature between conceptual metaphor and conceptual metonymy highlighted by Johnson and Lakoff. "In a *metaphor*, there are two domains: the target domain, which is constituted by the immediate subject matter, and the source domain, in which important metaphorical reasoning takes place and that provides the source concepts used in that reasoning. Metaphorical language has literal meaning in the source domain. [...] In a *metonymy*, there is only one domain: the immediate subject matter." [id.: 265] The metonymic mapping takes place within the experiential domain. In the example sentences above, the *author* Marquis de Sade is in the same experiential domain as the *writings* that one reads by him; the *activity* of dance is contiguous with the *profession* of dance; the *material* acrylic can stand for its *use* because there is no experiential gap that would make any talk about the material itself a (conceptual) metaphor of the *usage* of the material – or vice versa. The homogeneity of the experiential domain holds true for the other example sentences as well. This means that instead of a cross-domain mapping, there is an intra-domain mapping in the event of conceptual metonymy.

Sometimes it is difficult to distinguish between the metaphorical and the metonymic semantics of a sentence when we focus on language alone. In both cases, there is an act of mapping going on, be it intra-domain (metonymy) or cross-domain (metaphor) mapping: "a linguistic expression with meaning A expressing meaning B. If you are mostly looking at the surface forms of the language, rather than at the conceptual systems and inferential structure, you may not

⁶⁰Cf. subsection 4.2.4.

be looking in the right place to notice the difference.” [id.: 265–6] Thus, if we just read or hear sentences like ‘He’s in dance’, ‘Acrylic has taken over the art world’, or ‘New windshield wipers will satisfy him’ without understanding the inferential structure that is lying behind the formulation of these sentences, then theoretically we could understand ‘He’s *in* dance’ as relying on a CONTAINER metaphor, ‘Acrylic has *taken over* the art world’ as a mapping of TAKING OVER from the source of WAR (conquering), and SATISFY, which is derived from a bodily action (lat. *satis-facere*: to *make* sufficient), as a metaphor to describe the target domain of an emotional state. Even when it appears that there are two different domains, such as space and time, we can take these domains either in “a single, literal frame” [id.: 266] to express a metonymy such as “San Francisco *is a half hour* from Berkeley” [id.], or we can hold the domains separate and map a spatial expression into the domain of time, like in “Chanukah *is close to* Christmas.” [id.] “The moral is this: When distinguishing metaphor and metonymy, one must not look only at the meanings of a single linguistic expression and whether there are two domains involved. Instead, one must determine how the expression is used.” [id.: 267]

Ad 3) Conceptual metaphors enhance our cognitive abilities by helping us to discover things in a new light, to conceptualize, interpret and express the meaning of experiences for which there are no literal means that directly relate to them. But conceptual metonymy also is beneficial for our faculty of understanding, namely for a better understanding of an experiential domain that we have referential access to already. Johnson and Lakoff give an example that is important for my further discussion of metonymy, because it employs the metonymy THE PART FOR THE WHOLE, which is, as we will see in subsection 5.2.2, one of the two principal ways in which a conceptual metonymy is structured (the other is THE WHOLE FOR THE PART). In the metonymy THE PART FOR THE WHOLE, “there are many parts that can stand for the whole. Which part we pick out determines which aspect of the whole we are focusing on. When we say that we need some good heads on the project, we are using ‘good heads’ to refer to ‘intelligent people.’ The point is not just to use a part (head) to stand for a whole (person) but rather to pick out a particular characteristic of the person, namely, intelligence, which is associated with the head.” [id.: 36] For this reason, conceptual metonymy in general and THE PART FOR THE WHOLE in particular “allows us to focus more specifically on certain aspects of what is being referred to. [...] Metonymic concepts (like THE PART FOR THE WHOLE) are part of the ordinary, everyday way we think and act as well as talk.” [id.: 37] Whereas all of the example sentences given above depict the opposite metonymic structure (THE WHOLE FOR THE PART), it is equally true that by using a wider scale as a source metonymy and by therefore implying the special while expressing the general, we understand better what is targeted through the source than by simply expressing the target as such. E.g. if we were to say ‘*The reporter from the Times* hasn’t arrived at the press conference yet’ instead of ‘*The Times* hasn’t arrived at the press conference yet’, then we would suppress the association that with and through the single reporter, the whole for which they work is present, or, in this case, absent. This means that “we are using ‘The Times’ not merely to refer to some reporter or other but also to suggest the importance of the institution the reporter represents.” [id.: 36] Thus, with conceptual metonymy we can enhance our understanding of one experiential domain by implying two things for the price of one.

Although the notion of conceptual metonymy pops up several times in the later works of

Johnson and Lakoff,⁶¹ they mostly concentrate on conceptual metaphor and its conditions, applications and consequences.⁶² This primary focus on conceptual metaphor may be the reason why after *Metaphors we live by*, it “took almost another twenty years to fully redress the balance between metaphor and metonymy [...]” [Dirven 2003a: 1] What has happened in this time and has been happening until the present day in the research on conceptual metonymy which can be described as an update of the just-discussed three defining features which Johnson and Lakoff address. My aim for the remainder of this section is to show how a selection of updating research on these defining features can serve the purpose of identifying the notion of PWO with the metonymic nature of our ordinary language and the embodiment that forms its ground in order to respond to the ordinary judgment aspect of what I have called above the *quaestio iuris* of meta-ontology.

5.2.1 Conceptual Metonymy as a *Stand-For* Relation

This distinction between a metonymic *stand-for* relation and a metaphorical *is-like* relation actually dates back at least to R. Jakobson’s influential 1956 article ‘The metaphoric and metonymic poles’. Therein, Jakobson argues that language, speech as well as human behavior and even art are based on a “bipolar structure” [Jakobson 2003: 44] that consists on the one hand of an act of selection and substitution, which is based on the similarity of what we can call experiential domains, and on the other hand of an act of combination, which is based on experiential contiguity. The absence of either one of these two poles would be a symptom of aphasic disorder, such that “[m]etaphor is alien to the similarity disorder, and metonymy to the contiguity disorder.” [id.: 42] It is true, as H. Bredin correctly remarks, that in this wide scope the distinction between metaphoric similarity and metonymic contiguity is too restrictive and inclusive, among other things because “[r]eality is a great deal more complex, its inner relationships a great deal more varied, than the linguistic concepts of similarity and contiguity are able to compass” [Bredin 1984b: 99]. But the idea as such that metaphor and metonymy are primary structures of language and thinking that could be based on similarity and contiguity has found its way into recent debates on these subject matters in cognitive linguistics. This we have seen in the previous discussion of Johnson and Lakoff. However, their first characterization of metonymy as a *stand-for* relation and metaphor as an *is-like* relation has been critically updated by later scholars, mainly in the case of conceptual metonymy, and for a number of reasons.

Already the three aspects of conceptual metonymy that are provided by Johnson and Lakoff entail one reason why contiguity does not have to be a defining attribute of conceptual metonymy. This is because the second aspect, i.e. the singularity of the experiential domain, which is more widely accepted in research on conceptual metonymy, comprises the first aspect, i.e. contiguity. It is therefore unnecessary to postulate contiguity as a further defining attribute next to domain unity. “Contiguity usually suggests spatial continuity, although, admittedly, this notion can be extended to refer to conceptual continuity. Whatever the case, since metonymy

⁶¹Cf. for example Johnson [1987: 100, 169, 171, 191–2, 209; 1989b: 113, 166; 1999: 82, 99; 2007b: 106, 170; 2008: 44] and Johnson and Lakoff [1999: 305, 481].

⁶²Except for Lakoff [1987: 77–90], who discusses metonymy to show how salient properties of experiential domains (what he calls ICMs: Idealized Cognitive Models) serve as partlike prototypes for such domains as wholes.

is based on domain-internal conceptual connections, the notion of ‘contiguity’, whether applied to non-spatial relations or not, follows naturally as a consequence of domain inclusion, thus becoming theoretically inconsequential.” [Ruiz de Mendoza 2014: 146] This means that if it is agreed upon that we do not transcend the experiential domain in the case of conceptual metonymy, and if we understand contiguity as the fact that entities “are contiguous because they are associated in experience” [Croft 2006: 280], then – by way of Occam’s razor – there is no need to postulate contiguity as a further defining feature of conceptual metonymy.

A second reason why it is insufficient to (co-)define conceptual metonymy as being based on contiguity relates to the act of substitution that is supposedly involved when we make one entity metonymically stand for another entity. If, within an experiential domain, we substitute *X* (e.g. the German chancellor and other policy makers) for *Y* (e.g. the capital of Germany) to say that *Y* instead of *X* did *Z* (e.g. ‘Berlin sends its condolences’), then we do not just substitute one thing for another such that the meaning of *Y* would make the meaning of *X* negligible and irretrievable. Instead, as Radden et al. [1999: 19] point out, *X* and *Y* are both conceptually present when we ‘substitute’ one for the other. “Metonymy does not simply substitute one entity for another entity, but interrelates them to form a new, complex meaning. [...] Metonymic relationships should therefore more adequately be represented by using an additive notation such as *X PLUS Y* [...]” This problematization of contiguity as a *stand-for* relation makes K.-U. Panther conclude that even if in a conceptual metonymy the target meaning (e.g. the German chancellor and other policy makers) is more prominent than the source meaning (e.g. the capital of Germany in its political function), “the traditional view of metonymy as a ‘stand-for’, i.e. a *substitution* relation, is the borderline case where the target meaning has become *maximally prominent*. When this happens, there is no metonymic relation anymore, because the source meaning has simply been supplanted by the target meaning.” [Panther 2005: 370–1] We will see in subsection 5.2.3 that this co-activation of source and target within the same experiential domain enforces the third attribute of conceptual metonymy, namely its bidirectional ‘access-to’ relation.

In other publications, both Ruiz de Mendoza and Panther mention a third reason why the substitution hypothesis is insufficient. The incorrect assumption that (conceptual) metonymy can be based on a *stand-for* relationship between target and source is motivated by regarding metonymy only as being referential and not as, for example, predicational. “A corollary of the substitution theory is that the source and the target are, at some level of analysis, considered to be equivalent ways of picking out the same referent. For example, in the sentence *Buckingham Palace issued a statement this morning*, the place name *Buckingham Palace* (source) may be said to stand for the British queen or one of her spokespersons (target). Under this view, the source expression indirectly achieves the same referential purpose as the more direct referring expression *the Queen*.” [Panther 2007: 237–8] However, alongside the referential type of metonymy, there is, for example, the predicational type, for which such a *stand-for* relation does not work. We are employing a predicational metonymy “only when it is possible for a metonymic relationship to bring out a quintessential characteristic of the source to map to the target [...]” [Ruiz de Mendoza 2000: 114] In the predicational metonymy ‘He is a fine bass’, uttered by “a choir director who is really impressed by the beauty of the voice of one the members of the choir” [id.], we do not transcend the experiential domain of choir music, but instead of referring to a really existing bass as an object, we rather pick out one aspect

of a bass (finesse) and map it predicationally to the choir member in question. This is why, according to Ruiz de Mendoza, the referential metonymy ‘John is the ham sandwich’ in the experiential domain of a restaurant waiter/waitress works, but not ‘John is a ham sandwich’, because “it is difficult to find out a quintessential characteristic of a ham sandwich that will map onto John.” [id.] Thus if such an incorrect predication metonymy is obviously not a case of a *stand-for* relationship, then neither are more plausible predication metonymies such as ‘John is a brains’ or ‘She’s just a pretty face’.⁶³ Ergo, determining substitution as a defining principle of conceptual metonymy is inadequate, because – even if we parenthesize the two other reasons just given – substitution only defines referential metonymies but not, for example, predication metonymies.⁶⁴

These three reasons form convincing evidence that the traditional distinction between (conceptual) metaphor as an ‘is-like’ relation of similarity and (conceptual) metonymy as a ‘stands-for’ relation of contiguity should not be counted as a distinctive feature of these two categories, at least not for the latter. Whereas the third reason points to the internal insufficiency of attributing the necessity of substitution to conceptual metonymy, given that this necessity at most applies to the referential kind of metonymy, the other two reasons point to distinctive features that lie in the more basic realm of the experiential domain. The first reason makes the notion of contiguity being absorbed by the broader and more widely accepted notion of intra-domain mapping. The second reason clarifies that we misunderstand substitution when we interpret it as a disappearance of the source, instead of its being still experientially active yet backgrounded. Both the first and the second reason indicate that PWO, should it indeed be identifiable in ordinary language as conceptual metonymy, cannot be explained by a substitution relation such that a part of a whole stands for, i.e. *is replaceable with* the whole or the whole stands for, i.e. *is replaceable with* a part. If this were to be the case, then we could not speak of a proper oscillation anymore, because in an oscillation, all poles actively ensure an ongoing, positive tension during which the activation of one pole is not accompanied by the deactivation of any other pole. Thus, it would be possible to identify PWO as conceptual metonymy, but only if, firstly, the idea of intra-domain mapping comes down to a mapping of part(s) to whole and whole to part(s), if, secondly, the co-activation of all subdomains involved is accounted for, and if, thirdly, we reject the characterization of conceptual metonymy as a ‘stand-for’ relation of contiguity.

5.2.2 Conceptual Metonymy as Part-Whole *Intra-Domain* Mapping

Like primary conceptual metaphor, conceptual metonymy is based both on the sensorimotor domain (mainly by being determined by the PART-WHOLE image schema) and on an experiential domain to which we have direct conceptual and perceptual access. Unlike primary conceptual metaphor, conceptual metonymy does not have the function of transcending one experiential domain in order to map an element of this domain to another domain due to the supposed similarity of the element and the difference of the domains. The source and the target of metonymic mappings are located within one and the same experiential domain. The contents of this experiential domain are necessarily contiguous, which is why contiguity is not an additional

⁶³Cf. for these and other examples Ruiz de Mendoza [2000: 114].

⁶⁴As Panther [2007] demonstrates, substitution also does not define illocutionary metonymies.

defining feature of conceptual metonymy. With these aspects in mind, we can understand Radden's [2003: 413] definition of conceptual metonymy: "Any two entities, events or domains that are experienced together are conceptually contiguous and form a 'metonymy-producing relationship' [...], or, for short, a metonymic relationship. Metonymic relationships may give rise to metonymy and possibly metaphor." Such intra-domain relationships can give rise both to primary metaphors, as they likewise come into existence within one and the same experiential domain,⁶⁵ and complex metaphors, because they presuppose such an initial experiential domain. Moreover, Radden describes two ordinary experiential situations that give rise to two types of metonymic relationships: correlation and complementarity.

Correlation means that we often experience two or more variables of one experiential domain as interrelated such that "changes in one variable are accompanied by changes in the other variable." [id.] One example that I can think of and that everybody is familiar with concerns nighttime and daytime: It seems that as a general rule, the better we sleep, the better we function during the day and vice versa. Radden himself refers to proverbial expressions such as "*Whats good for General Motors is good for America*" [id.: 314] This and my own example are 'positive' correlations, because they imply a causal relationship between the two variables. "Negative correlations, by contrast, do not invite a causal interpretation: Thus, the proverb *The nearer the church, the farther from God* is not understood in the sense of 'someone is farther from God because he is nearer to church,' nor does the proverb *Short visits make long friends* mean 'they are long friends because they pay short visits.' The default type of correlation in our experience of phenomena in the world is that of positive correlation; this is, in fact, the only type of correlation that pertains to metaphor." [id.] Positive correlations then give rise to primary metaphors like UP IS MORE, SAD IS DOWN, ACTIVE IS ALIVE, IMPORTANT IS BIG, etc. But correlations are also crucial to understand conceptual metonymies. Although these "metonymic relationships within metaphor can, however, not be expressed as independent metonymies" [id.: 416], the metonymic relationship of correlation, positive or negative, basically underlies all conceptual metonymies. If we consider one of the most famous metonymies from the literature on this topic, 'The ham sandwich is waiting for his check', then there is an obvious correlation between the source (the meal 'ham sandwich') and the target (the person who ordered and received the ham sandwich). Had this person not ordered the ham sandwich, or had the person received and accepted a soup instead of his original order, then he could not be referred to in this manner. Thus, in the particular experiential domain belonging to the waiter/waitress who utters this sentence, the person as a whole correlates with a part of him (the having ordered and received a ham sandwich). There would be no experiential correlation, for instance, between this person and the salt shaker he used while eating his sandwich, such that 'The salt shaker is waiting for his check' would be an appropriate metonymic expression.

Complementarity is either an experienced part-part or an experienced part-whole relationship in which the experience of the one side demands the experience of the other side. Complementarity as a metonymic part-part relationship is a "relationship in which the complementary, or opposing, parts are tightly linked to each other and establish a unity." [id. 416] In the sensorimotor domain, for example, I would think of 'left hand' and 'right hand' or 'inner' and 'outer' as complementary pairs. In a similar fashion and due to the "close interdependence of body and mind" [id. 417], Radden refers to the primary conceptual metaphor THE MIND IS A BODY. This

⁶⁵Cf. subsection 4.2.1.

explains metaphoric expressions such as “*to have a strong will, to handle a situation, to turn one’s back on an issue, to swallow an idea, etc.*” [id.] In addition, I think that the body-mind-complementarity could also form the conceptual metonymy THE BODY STANDS FOR THE MIND (whereby ‘stands for’ is not a substitution relation in the sense discussed and rejected above). When we say ‘she is a brain’, ‘his fingers are all thumbs’ or ‘she has a green thumb’, then parts of the body represent parts of our mind (intelligence, a lack of skill, botanical aptitude) in order to establish a unity that embraces bodily and mental aspects. As another example, Radden refers to irony, where we often use one term to refer to its complementary term, such as in ‘this is such a *great* story’ or ‘the president is a *truly humble* man’ (my own examples). However, part-part complementarity in metonymy has its limits, because we cannot for example substitute ‘husband’ for ‘wife’ or ‘teacher’ for ‘student’ without risking communicative clarity.⁶⁶ Next to part-part complementarity, we daily experience part-whole complementarity: Being a husband means being part of a family, being a student means being part of a university, feeling one’s own heartbeat means being part of life as a whole. The experience of such relationships in which parts and wholes are complementary is, according to Radden, “widely exploited in metonymies in which the upper end of a scale is used to stand for the whole scale (*How old are you?* → ‘what is your age?’) and, conversely, the whole scale is used to stand for its upper end (*I am beginning to feel my age* → ‘I am beginning to feel that I am getting old’).” In the same fashion, part-whole complementarity can lead to a primary metaphor like LOVE IS UNITY (e.g. in the expression ‘they are bound together.’).⁶⁷

The metonymic relations of correlation and complementarity show how directly metonymic expressions and their underlying conceptual source-target mappings are linked to and derived from the experiential domain. Contrary to the definition of conceptual metonymy as a substitution relation, intra-domain mapping is generally accepted as one of conceptual metonymy’s characteristic features by many scholars working in this field. Thereby, conceptual metonymy is often contrasted with conceptual metaphor, whereby the latter is said to involve two domains, i.e. cross-domain mapping, which is only the case, however, for complex and not for primary metaphors. Gibbs [1999a: 62], for example, writes that in “metaphor, there are two conceptual domains, and one is understood in terms of another. [...] On the other hand, metonymy involves only one conceptual domain, in that the mapping or connection between two things is within the same domain, or within the same domain matrix [...]” In a similar fashion, Barcelona [2002: 208] defines conceptual metonymy as follows: “A metonymy is a mapping, within the same overall cognitive domain, of a cognitive (sub)domain, called the source, onto another cognitive (sub)domain, called the target, so that the latter is mentally activated.”

Despite this general agreement concerning the single-domain approach towards conceptual metonymy,⁶⁸ there are different opinions on how many kinds of metonymic source-target mappings there are. Here we can roughly distinguish four basic positions. The first one holds that there are at least more than three kinds of metonymic source-target mappings. In *Metaphors we live by*, for instance, Johnson and Lakoff mention and give examples for the following kinds of metonymies: THE PART FOR THE WHOLE, PRODUCER FOR PRODUCT, OBJECT USED FOR USER, CONTROLLER FOR CONTROLLED, INSTITUTION FOR PEOPLE RESPONSIBLE, THE PLACE

⁶⁶Cf. Radden [2003: 417].

⁶⁷Cf. id. [418].

⁶⁸Cf. Barcelona [2003: 246] for a similar definition and Barnden [2010] for a rather critical stance.

FOR THE INSTITUTION, THE PLACE FOR THE EVENT, and THE INSTITUTION FOR THE PERSON RESPONSIBLE.⁶⁹ More recent approaches towards conceptual metonymy, however, significantly narrow down the number of possible kinds. The second position postulates only three kinds of metonymies: PART FOR WHOLE, WHOLE FOR PART, and PART FOR PART. Among those who argue for this position are G. Radden and Z. Kövecses in their detailed 1999 article ‘Towards a Theory of Metonymy’.⁷⁰ Thirdly, there is the position on which I will concentrate in the following, not only because it seems to be currently receiving the most affirmation, but also because it overlaps with the idea of PWO. This position only allows for two basic kinds of metonymic source-target mappings: PART FOR WHOLE and WHOLE FOR PART. Finally, K.-U. Panther defends a fourth position with only one basic kind of mapping: PART FOR WHOLE, which is “a cognitive operation of meaning *elaboration*, i.e. an expansion of source meaning into a more complex conceptual structure of which the source meaning is part.” [Panther 2005: 358] For the reasons just given, and because an *exhaustive* discussion of conceptual metonymy in cognitive linguistics is not the aim of the present project, I would like to elaborate on the third position.

The position that reduces conceptual metonymy to two basic kinds of source-target mappings, i.e. PART FOR WHOLE and WHOLE FOR PART, is based on a number of reasons. Ruiz de Mendoza, who originally suggested this position, gives at least three reasons in favor of this reduction, which are all directed against metonymic PART FOR PART mappings. Firstly, he argues that “if a mapping between two independent, discrete entities within a given conceptual structure were possible, this mapping would have more in common with metaphor than with metonymy.” [Ruiz de Mendoza 2000: 115]. Although he does not further elaborate on this argument, I think it makes sense if we relate it to primary metaphors. These indeed appear in the same ‘conceptual structure’ or, as I prefer to call it, experiential domain. In the primary metaphor MORE IS UP, for example, we can connect the independent entities of ‘income’ and ‘vertical scale’ to say that ‘his income is rising’,⁷¹ whereas we would not metonymically refer to a vertical scale when we use the word ‘income’, e.g. in ‘are you happy with your income?’. Instead, we would probably not only refer to ‘income’ alone, i.e. as a naked number, but to a broader experiential context in which the income is one part along with the kind of work, the labor conditions, the colleagues, the next promotion, the tax system, etc. Secondly, if we accept PART-FOR-PART mappings, then “we would have the problem of determining why not any two entities in a conceptual structure could be mapped metonymically.” [id.] Thus, as we have seen, we can refer to a customer by naming the food they ordered, but not by naming the salt shaker they used or the chair on which they are sitting. The ordered and received food experientially or conceptually appears as a part of the customer as a whole, whereas the other objects have almost no such relation with them. A third reason against PART-FOR-PART mappings concerns anaphoric references. Let us have a look at two example sentences provided

⁶⁹Cf. Johnson et al. [1980: 38–9; 59].

⁷⁰“First, the ICMs which include metonymy-producing relationships may be subsumed under two high-level conceptual configurations: (i) whole ICM and its part(s) and (ii) parts of an ICM. The whole-part configuration typically gives rise to metonymies involving things, while the part-part configuration primarily applies to metonymies involving predications in events and states. This may have to do with the conceptually autonomous status which we attach to things as opposed to the dependent status which we attach to relations, which require the presence of things to be related.” [Radden et al. 1999: 43]

⁷¹Cf. Johnson et al. [1980: 15 f.].

by Ruiz de Mendoza:

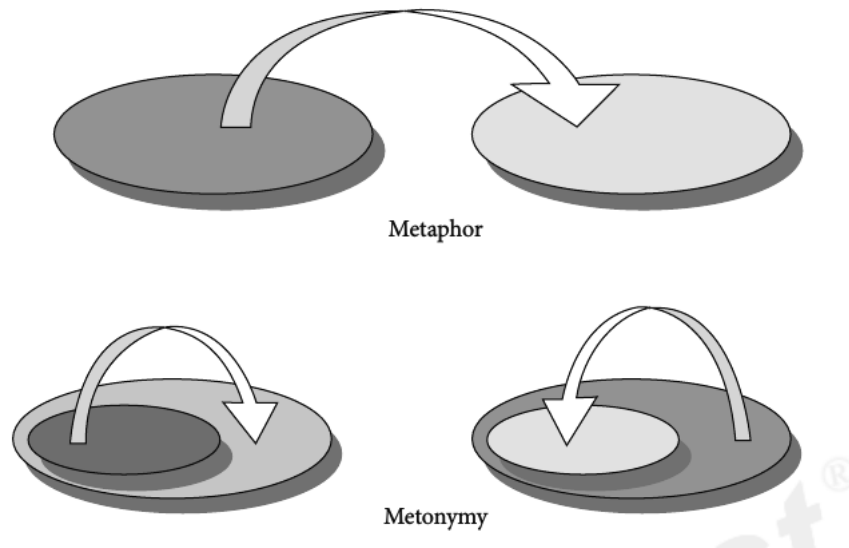
- (a) The ham sandwich is waiting for his check, and *he* is getting restless.
- (b) ?The ham sandwich is waiting for his check, and *it* looks rather stale.

We can only understand the correctness of (a) and the incorrectness of (b) when we take the customer (whole) as a target that is referred to by *he* in (a) and not referred to by *it* in (b). On the other hand, if we take ‘customer’ as one part and ‘ham sandwich’ as another part such that we have a PART-FOR-PART mapping, then we would have to draw the wrong conclusion that (b) is correct. “The reason for this probably lies in the fact that for anaphoric reference to be more workable, it is preferable to have a clear, unambiguous domain, and matrix domains usually qualify better in this respect than subdomains. Thus, the source of a metonymy of the source-in-target [WHOLE-FOR-PART, M.S.] type needs to be developed into its matrix domain [the whole, M.S.] – as in the ‘ham sandwich’ example – to be available for reference, while the target of a target-in-source [PART-FOR-WHOLE, M.S.] metonymy, which is itself a subdomain of the source, is usually too vague to be an adequate candidate for anaphoric reference – as in *Nixon bombed Hanoi*, where ‘Nixon’ refers rather imprecisely to some part of the army under Nixon’s command.”⁷² [id.: 116–7] These three reasons indicate the plausibility of conceptual metonymy as consisting of two types of metonymic mapping: PART FOR WHOLE and WHOLE FOR PART.

The two types of metonymic mapping can also be regarded as a reduction (WHOLE-FOR-PART) or an expansion (PART-FOR-WHOLE) of a domain,⁷³ which together are often referred to as ‘domain elaboration’. An example sentence for a domain reduction would be ‘let’s have a *coffee*!’, where ‘coffee’ refers to a whole situation of chatting, eating a snack, taking a break, etc. This whole experiential domain is reduced to the simple word ‘coffee’, which is, however, just a part of the whole. An example sentence for a domain expansion would be ‘Can I use your *bathroom*?’, when you actually only intend the toilet as one part of the bathroom. In this way, it is possible to re-interpret other supposed types of metonymic mapping, for example PRODUCER-FOR-PRODUCT (e.g. ‘I want an *Apple*’, where ‘Apple’ is the whole that refers to ‘a notebook produced by Apple’) or CAUSE-FOR-EFFECT (‘Sorry, I missed the bus’ refers to the whole situation in which a person ultimately arrives too late). Such a twofold approach towards understanding the underlying dynamics of conceptual metonymy is also argued for by R. Brdar-Szabo & M. Brdar [2011]. These authors provide a helpful diagram (Figure 5-4) that not only illustrates how the intra-domain mapping of conceptual metonymy differs from the cross-domain mapping of conceptual metaphors. The diagram also shows how the former either involves PART-FOR-WHOLE and WHOLE-FOR-PART mapping, which are actually better formulated as PART-TO-WHOLE and WHOLE-TO-PART due to the inadequacy of the substitution relation and the dynamic nature of the act of metonymic mapping.

⁷²Cf. the sentences “‘Nixon bombed Hanoi, and *he* knew what he was doing.” and “‘?Nixon bombed Hanoi, but *they* were under orders (where ‘they’ refers to the soldiers who did the bombing).” [Ruiz de Mendoza 2000: 117] For a more recent discussion of this argument that comes to the same conclusion, cf. Ruiz de Mendoza [2014: 147].

⁷³“[...] metonymy can be broken down into two more basic operations, domain expansion and reduction, which give rise to source-in-target and target-in-source metonymies respectively.” [Ruiz de Mendoza 2014: 149]

Figure 5-4: *Intra-Domain and Cross-Domain Mapping*⁷⁴

As a further advantage, the reduction of conceptual mapping to these two possibilities establishes a clear connection between the sensorimotor domain and the experiential domain that is expressed in metonymic language. That is to say, that the act of PART-TO-WHOLE and WHOLE-TO-PART mapping can be regarded as a result of the existence and prevalence of the PART-WHOLE image schema. In one of the few articles that connects image schemata with conceptual metonymy, Díez [2001: 56] states that the PART-WHOLE “image-schema is employed whenever a part of an entity is used to stand for the whole entity [...] or vice versa (e.g. She is learning to tie her shoes, where ‘shoes’, the whole, stands for ‘shoelaces’, a part).” If we accept the twofold act of mapping, then all metonymic mappings would thus be explainable with the PART-WHOLE schema. Díez, however, also accentuates the importance of two other image schemata that could play a role in metonymic mappings: CONTAINER and EXCESS. Without going into further details, I think that in the context of conceptual metonymy, both of these image schemata can be identified as variants of the PART-WHOLE schema. Díez describes the CONTAINER schema, which is probably the image schema that is the closest to the PART-WHOLE schema, as follows: “the ‘gestaltic’ nature of this image-schema makes us see the contents as part of the whole so that we see the container as naturally embracing its contents. This way, the absence of the container entails the loss of its contents, unless the opposite is specified. For example, by saying *My suitcase was stolen* at the airport the speaker actually conveys the idea that he has lost not only the suitcase but also everything that was kept inside it.” [id.: 53] If we say that in the example of the suitcase, a container refers to the contained, then we would actually have to wrongly conclude that only the contained was stolen, but not the container itself. In contrast, if we say that in this example a part (the suitcase) refers to the whole (the suitcase with its contents), then we can draw correct conclusions about what has been stolen. Furthermore, the “EXCESS image-schema is invoked by all those expressions which convey that something is in a larger amount than would be desirable [...]” [id.: 59] For example, “[w]henver [a] container is very full, it becomes harder to keep its contents under control.” [id.] However, I would like to suggest that this kind of excess can equally be explained with

⁷⁴Brdar-Szabo et al. [2011: 221]. Reproduced with the kind permission of the authors.

the PART-WHOLE image schema, in particular with its configuration parameter that is already mentioned by Lakoff. If the parts of a whole are configured in such a way that the stability of the whole is endangered, then we can speak of an excess, without – adhering to Occam’s razor – any need to further postulate or involve an ‘EXCESS’ image schema. Even if other image schemata play a role for metonymic PART-TO-WHOLE and WHOLE-TO-PART mappings, it is evident that without the PART-WHOLE image schema, no such conceptual acts could be conducted. The next and final step now is to ascertain if and where the notion of PWO, which we determined as a variation of the PART-WHOLE image schema, has its place in conceptual metonymy.

5.2.3 Conceptual Metonymy as Co-Activation of Source and Target

Conceptual metonymy is a cognitive process expressible in language with which we gain mental access to a whole via one of its parts (domain expansion), or to a part via the whole (domain reduction). Unlike in conceptual metaphor, in conceptual metonymy “the source is not used as a way of reasoning about the target but as a way of affording access to the target, which is always implicit, independently of the kind of metonymy we have.” [Ruiz de Mendoza 2014: 149] Instead of being a substitution relation, it would be better to classify conceptual metonymy as a connection of implication or reference, in which the “the source domain, which can either include the target or be part of it, is used as a point of access to the target domain.” [id.: 162] Due to this dynamic process of cognitively spanning and striding a range between source and target, the former is a “vehicle” [Radden et al. 1999: 19] with which we reach a desired target. The determination of the direction with which the target can be reached depends on certain salient, we could also say ‘concise’ (*prägnant*) or ‘conceptual prominent’⁷⁵ characteristics of it.⁷⁶ For example, in a PART FOR WHOLE metonymy such as ‘I go to bed’, which actually not only includes the bed as such, but a whole set of other aspects (undressing, tooth brushing, switching off the lights, etc.), we pick out the most salient aspect ‘bed’, because it represents the whole in one single word or concept. In a WHOLE FOR PART metonymy such as ‘Washington decided to build a wall’, we refer to a political institution that is located, among many other things, in Washington DC, which in turn has become a salient, i.e. symbolic, aspect of these institutions.

Whereas conceptual metaphor is rather a ‘copy-and-paste’ mapping from a source to a target, conceptual metonymy can be understood as a mental ‘shortcut’ that activates a desired target. This cognitive process is important, since “we think ‘metonymically’ because it is physically impossible to consciously activate all the knowledge that we have of a particular concept at once, so we tend to focus on a salient aspect of that concept, and use this as point of access to the whole concept. For example, when asked to picture a computer, most people will picture just the screen, rather than the hard disk, the tower, the mouse and so on.” [Littlemore 2015: 4–5] In this context, Lakoff demonstrates that metonymical reasoning is not just a matter of language, but is deeply anchored, for example in social stereotypes.⁷⁷ This is also why his

⁷⁵Cf. Panther [2005: 369].

⁷⁶Cf. Gibbs [1999a: 71].

⁷⁷“[A]n additional level of prototype effects occurs in the *mother* category. The source of these effects is the stereotype of the mother as housewife. Social stereotypes are cases of metonymy where a subcategory has a socially recognized status as standing for the category as a whole, usually for the purpose of making quick judgments about people. The housewife-mother subcategory, though unnamed, exists. It defines cultural

notion of ICM (Idealized Cognitive Models), in which wholes possess more and less ‘ideal’ parts, has been picked up by scholars working on conceptual metonymy,⁷⁸ although I myself prefer the term ‘experiential domain’ to highlight the perceptual and cultural, not merely conceptual dimension of a domain.

However, the metaphor of the source being a ‘vehicle’ towards the target can be misleading, because it implies that once the target has been reached, there is no need for the source to be still activated. To prevent this possible misunderstanding that would put conceptual metonymy close to conceptual metaphor, Panther [2005: 370] emphasizes that “in a *prototypical* metonymy the target meaning is more prominent than the source meaning, although the source meaning must of course have a sufficient degree of salience in the context of the utterance in order to be able to activate the target. The *raison d’être* of metonymy is to make the target not only *accessible*, as suggested by the reference-point theory of metonymy, but, just as importantly, to make it *available* for the ensuing discourse.” In other words, both the part and the whole of an experiential domain must be cognitively activated for a conceptual metonymy to work and to be employed in language. This mental co-activation of part and whole within one experiential domain is a significant empirical finding that concerns the ontological nature of PWO which I want to investigate. It shows that there is at least one ontological region (embodied natural language) in which we can find a structure that displays how whole and parts can be both distinguishable and inseparable, or, in other words, both disjunctive and adjunctive. As Radden et al. [1999: 19] state, in conceptual metonymy “both the vehicle and the target are conceptually present. However, one of them is seen as being more salient than the other and is therefore selected as the vehicle.” Brdar-Szabo et al. [2011: 227] even conclude that the “phenomenon of simultaneously activating more than one topical concept, viz. a metonymic source, and one or more metonymic targets, is ubiquitous.” Thus for instance when we say that ‘the ham sandwich is waiting for his bill’, we both think about the ordered and received food *and* about the customer as a whole who wants to pay. When we, as a waiter/waitress, look at the customer, we simultaneously understand him as an integral person (whole) *and* we see the, from our perspective, salient, aspect of having ordered a ham sandwich (part). Both sides are combined yet distinguishable and lead to one another: They oscillate in mutual dependence. This is a remarkable cognitive act, which we already find in the development of the PART-WHOLE image schema, for example when a child draws a human being just by showing lines of arms, legs, trunk and head. What is perceptually present is both these simple lines as salient parts *and* a complete human body, even for the adult who studies the drawing.⁷⁹ In the same spirit, a good caricature accentuates salient aspects of a face through which we gain access to the whole character of the person thus depicted. Therefore, we can figuratively say that a conceptual metonymy works like a magnifying or a reducing lens with which we access the target while still being aware of the original size and scope of it as source.

Thus, conceptual metonymy allows for a simultaneous co-presence of parts and whole. This poses questions concerning the interconnection of these two sides. We have already seen that

expectations about what a mother is supposed to be. And because of this, it yields prototype effects. On the whole in our culture, housewife-mothers are taken as better examples of mothers than nonhousewife-mothers.” [Lakoff 1987: 79–80]

⁷⁸Cf. Radden et al. [1999: 20] and Littlemore [2015: 10]. For a more critical discussion of ICM for conceptual metonymy cf. Benczes [2011: 208].

⁷⁹Cf. Arnheim [1974: 142–3].

there is some kind of access-relation between source and target. Once the act of metonymic mapping has gained access to the target, however, the source is still conceptually active. As both source and target are located in the same experiential domain, there must be some kind of internal process that makes the parts and the whole experientially united and distinguishable at the same time. For this phenomenon, as already for the notions of the PART-WHOLE image schema and for perceptual/conceptual salience, some scholars in cognitive linguistics draw on basic findings of Gestalt theory. In the case of the co-presence of parts and wholes in conceptual metonymy, one finding some scholars draw on is the distinction and interplay between figure and ground.⁸⁰ Just as a figure only appears, i.e. becomes present on a background, the target of a metonymy can only be present because the source is backgrounded rather than vanished and invisible. Accordingly, Panther et al. [2007: 242] write that a “further important property of a prototypical metonymy is that it *highlights* or *foregrounds* its target content and, accordingly, backgrounds its source content.” This means firstly that although both parts and whole are co-present, there is always one side, i.e. either the whole or one of the parts, that is gradually *more* present than the other side, without this other side being non-present. With the Husserlian terminology, we could say that in conceptual metonymy, there is a dependence relation of wholes and parts such that either side can be a continuous moment of the other side: If the whole is the target, it can be a foregrounded moment of the parts as background and vice versa. For example, if the whole customer is the target that is gained access to by ‘ham sandwich’, then the whole stands out on the backgrounded basis of one of its parts. Only in the extreme case of a complete substitution of the source by the target, i.e. if we understand metonymy as a stand-for relation, would the source be cognitively absent, as is generally the case with conceptual metaphor. Secondly however, the background-foreground relation of parts and whole in conceptual metonymy implies that we can also concentrate on the background again and make it stand out as foreground. In other words, we can ‘oscillate’ backwards to what we started out with, which is either one of the parts of the whole or the whole itself, “because the source concept is still usually retrievable (though backgrounded), even if the target concept is conventionalized in the lexicon.” [Brdar-Szabo 2011: 220] For example, when we are told ‘the ham sandwich is waiting for his check’, we can either refer to the foregrounded target and respond ‘*he* can wait a bit longer’, or we can shift back to the then foregrounded source by saying ‘*it* can wait a bit longer’, or we can even shift to another part of this experiential domain and say ‘I thought the *tomato soup* sitting next to it/him would pay today.’

This quality of shifting backward and forward between parts and whole is another important feature of conceptual metonymy which has been accentuated in the literature. Whereas conceptual metaphor’s act of mapping is characterized by being unidirectional, the relationship between source and target in conceptual metonymy is a bidirectional one. As Brdar-Szabo et al. [id.] formulate it, “[m]etonymic mappings can proceed in either direction, from the more concrete part of the domain (i.e., the subdomain) to the more abstract one, and the other way round [...]” To illustrate this point, these authors refer to their diagram (Figure 5-4) displayed above. Although this figure is helpful, I think it would be more accurate in illustrating the bidirectionality of source and target if the arrows pointing from the one to the other were to point in both directions. This would indicate that in a conceptual metonymy, we can cogni-

⁸⁰“More precisely, from a gestalt perspective, metonymy turns out to be a ‘figure/ground’ effect.” [Koch 1999: 151].

tively move backward and forward, i.e. we are not dealing with a source that is immutably backgrounded, but with an ongoing process of backgrounding and foregrounding. As Brdar-Szabo et al. [id.: 240] state themselves, with “metonymy there is room for corrections, moving forward or backward, i.e., hopping from one metonymic tier to another metonymic tier in a conceptual chain.”

This bidirectional process of ‘moving forward or backward’, which leads to a “mutual accommodation of source and target” [id.: 245], makes for the reversibility of source and target. To demonstrate this reversibility, Radden gives an example of the UP FOR MORE metonymy, which is reversible to the MORE FOR UP metonymy. If an attendant at a gas station asks us ‘How much gas do you want?’, the driver can answer ‘Just fill her up’. In this case, the “customer answers a question about a quantity by metonymically naming a level of height.” [Radden 2003: 411]. Conversely, the attendant can ask ‘Shall I fill her up?’ and the driver answer ‘Yes, put in as much as she can take’, which would be a MORE FOR UP metonymy. I would say that in this case, the UP as a vertical dimension is part of the three-dimensional tank that is fillable with a certain quantity of gas. In any case, as Barnden [2010: 22] puts it by referring to several other relevant publications on this topic, “the role that the target item plays in relation to the source item is an important part of the message, not just a processing route to determining the message.” This dynamic process of back-and-forth projecting, which is imaginable as an oscillation between whole and parts taken either as source or as target respectively, is not a demanding process of abstract thinking. On the contrary, “metonymic pathways are part of the cognitive competence of normal speakers and hearers and are readily accessible in particular linguistic and extra-linguistic contexts.” [Panther 2005: 353] Thus, in the case of what we can call ‘metonymic PWO’, we commonly remain in the familiar domain of ordinary language and thinking, i.e. in the commonsensical construction and (mutual) understanding of meaning in all of its aspects.

5.2.4 From Metonymy to Synecdoche and Back Again

After having identified conceptual metonymy and thus embodied language as an ontological region where PWO does occur, there is another question left to be answered: If conceptual metonymy consists both of PART-TO-WHOLE and WHOLE-TO-PART mappings, then where does synecdoche belong? For Johnson and Lakoff, for whom PART-TO-WHOLE and WHOLE-TO-PART seem to be only two kinds of metonymic mapping among many others, it is possible to “includ[e] as a special case of metonymy what traditional rhetoricians have called *synecdoche*, where the part stands for the whole [...]” [Johnson et al. 1980: 36] In this solution to the problem of how metonymy and synecdoche might relate to another, Johnson and Lakoff subsume synecdoche, as PART-TO-WHOLE or PART-FOR-WHOLE mapping, under the broader notion of metonymy. However, as for metonymy, there is not much to be found on synecdoche in the cognitive linguistic works of these two researchers. Their chosen solution may be justified by the fact that, as B. Nerlich points out,⁸¹ Jakobson himself already subsumes synecdoche under metonymy. The question concerning the relationship between synecdoche and metonymy, which often includes comparisons with metaphor and results in strong positions on which one of these three could

⁸¹Cf. Nerlich 2010: 297.

be the ‘master trope’, even dates back to P. Fontanier’s 1827 *Les Figures du discours*.⁸² It would go beyond the scope of this project to even summarize the regular shifts in this battle for importance. It is also not always clear whether synecdoche is additionally supposed to cover WHOLE FOR PART mappings. However, we can get a glimpse of the complexity involved in this discussion when we read Nerlich’s conclusion of how the importance of synecdoche developed over time:

“Looking back at the older and newer definitions of synecdoche one can only agree with Bernard Meyer when he writes that ‘La catégorie de la synecdoque apparaît donc comme une classe rhétorique d’extension flottante, une nébuleuse de figures variant autour d’un noyau stable.’ [...] First synecdoche was part of metaphor, then a whole trope in itself with a set of members whose number fluctuated over time, until, more recently, part of it was amalgamated with metonymy, namely the part–whole type of synecdoche. For a very long time the kernel of synecdoche consisted of two types of synecdoches: the part–whole one and the genus–species one, with the part–whole one being the epicentre, as a quick look at some reference dictionaries will confirm. Only recently has this kernel been broken up and one part of it been annexed by metonymy. In some cases the genus–species synecdoche was forgotten altogether in the process of reducing all tropes to two, namely metaphor or metonymy, and sometimes the genus–species part of the kernel was preserved to redefine synecdoche as a third member in a triplet of essential tropes, namely metaphor, metonymy and synecdoche.” [Nerlich 2010: 315]

Although I do not look back further at the history of this debate, Nerlich’s conclusion provides us with three important indications. Firstly, synecdoche traditionally not only consists of PART-TO-WHOLE mappings, but also, and perhaps less prominently, of GENUS-SPECIES relations. Secondly, with Jakobson and later with Johnson and Lakoff, the originally synecdochic PART-TO-WHOLE mappings have been subsumed under (conceptual) metonymy. Thirdly, synecdoche has ‘survived’ this subsumption, because it could keep its role for denoting genus-species relations. Thus even if metonymy now covers all PART-TO-WHOLE and WHOLE-TO-PART mappings and is therefore the most interesting trope for the present investigation of part-whole relations and PWO, there continues to be a right to exist, i.e. a proper purpose for synecdoche. In fact, even consisting of GENUS-SPECIES relations alone, synecdoche can be regarded as an important object of comparison that reveals one aspect about metonymy which we have not talked about so far, but which is nonetheless crucial for an ontological classification of metonymy: metonymy’s tendency towards reality, i.e. metonymy’s inherent realism.

When in the end of the last quote, Nerlich states that ‘the genus-species part of the kernel was preserved to redefine synecdoche’, she refers to K. Seto’s influential 1999 article ‘Distinguishing Metonymy from Synecdoche’. To me it seems that this article marks one of the most recent turning points for the determination of metonymy and synecdoche, not only explicitly in a cognitive linguistic framework, but more implicitly in an ontological framework as well. The latter is the case, because the distinction Seto makes between synecdoche and metonymy is nothing less than the drawing of an ontological borderline that divides what is in the world from

⁸²Cf. Fontanier [1968: 79–108] and for a historical discussion Schofer et al. [1977].

what is in the mind. Although, as Littlemore rightly criticizes⁸³ and on grounds of Johnson's refusal of a strict subject/object dichotomy,⁸⁴ such a clear distinction seems to be artificial and philosophically dubious, it points nonetheless to a reality-directed interpretation of conceptual metonymy, which is beneficial for the present ontological investigation. Seto's main claim is that metonymy includes, but is not exhausted by partonomies (part-of relations) and, more importantly, refers to objects existing in the outside world. Synecdoche, by contrast, refers to and is exhausted by taxonomies, which are mental categories about real and abstract objects. In Seto's own words, "Metonymy is a referential transfer phenomenon based on the spatio-temporal contiguity as conceived by the speaker between an entity and another in the (real) world" [Seto 1999: 91], whereas synecdoche "is a conceptual transfer phenomenon based on the semantic inclusion between a more comprehensive and a less comprehensive category." [id.: 92] This means that whereas metonymy is E(ntity) related, synecdoche is C(ategory) related. Synecdochic C-relations are taxonomic groupings of categories, such as the famous Linnaean classification of nature, where one sub-category is the 'kind of' of a more comprehensive category.⁸⁵ This is the GENUS-SPECIES relation of synecdoche that Nerlich mentions, where we have either GENUS TO SPECIES or SPECIES TO GENUS mappings (e.g. 'Look at this *dog*!' instead of 'look at this *Border Collie and Beagle crossbreed*!'). Metonymy, on the other hand, refers to relations that hold true and exist outside of the conceptual system with its more or less arbitrary classifications.

Seto then goes on to argue that partonymy is one kind of metonymy among others. As a result, he can claim that partonymy "is based on real-world constitutive relations; taxonomy is concerned with mental (re)classifications of categories. Whereas we have some, if not absolute, freedom to taxonomically (re)classify categories, we are not free to change constitutive relations in the world because the world is there just as it is." [id.: 94] Furthermore, if synecdoche refers to categories, then metonymy refers to individual entities, be they spatial,⁸⁶ temporal⁸⁷ or abstract⁸⁸ in nature. Unlike scholars who reduce metonymy to part-whole relations alone, Seto takes partonymies to be a kind of spatial metonymy next to CONTAINER-CONTENT and ADJACENCY relations. Here he seems to be closer to the originally stated multitude of metonymic kinds postulated by Johnson and Lakoff. This is interesting to notice but should not further concern us, as the more important and convincing lesson to learn from Seto's article is the artificial and often blurry,⁸⁹ yet heuristically helpful distinction between metonymy as a *real-world* directed trope and synecdoche as a *mind-directed* semantic act of categorization. As Nerlich

⁸³"However [...], it is often difficult to make a distinction between 'real' contiguity and contiguity 'in the mind'. All of the information that we have about 'the real world' is filtered through mental models that reflect our world views, and this is reflected in our language. This is why, when we look at examples of part for whole relationships in real-world linguistic data, the distinction between metonymy and 'synecdoche' becomes very blurred." [Littlemore 2015: 23]

⁸⁴Cf. subsection 4.1.2.

⁸⁵Cf. for a more philosophical, in-depth analysis of this taxonomic form of thinking Leisegang [1951: 257], who calls it a 'pyramid of concepts' (*Begriffspyramide*).

⁸⁶"Spatial entities' are understood here in the sense of physical entities which have spatial extension." [Seto 1999: 96]

⁸⁷"Contours which we impose on temporal entities are metaphorical in nature. A temporal entity is bounded by a temporal frame. The term 'frame,' itself metaphorical, should give what occurs (or 'takes place') in time a beginning and an end, making it possible to capture the event as an identifiable whole." [id.: 97]

⁸⁸"An abstract entity is typically a salient property of a thing." [id.: 98]

⁸⁹Cf. Barnden [2010: 20].

[2010: 311] formulates it in referring to Seto: “Metonymy exploits our knowledge of how the world *is*, synecdoche of how it is *ordered* in our mind.” It is this tendency of metonymy towards realism, its ‘reality-directedness’, which makes it possible to relate metonymic part-whole relations in ordinary language, stemming from the embodied PART-WHOLE image schema in the first place, back to the world itself, which is an important cue for not only identifying PWO in language and embodied structures, but also beyond.

In fact, Seto’s paper is just one recent instance in which metonymy’s tendency towards realism is highlighted. Whereas Seto makes use of the contrast and the traditional similarities between metonymy and synecdoche, other authors either accentuate metonymy’s universal, i.e. trans-linguistic nature and/or postulate metonymy’s realism via a comparison between metonymy and metaphor. In his reflection on ‘The metaphoric and the metonymic poles’, Jakobson already not only transcends the purely linguistic aspect of metonymy (and metaphor) by relating it to aphasic speech disorders. He also relates metonymy to literary realism and to prose in general, while metaphor is supposed to be typical for the Romantic period and for poetry.⁹⁰ Furthermore, Jakobson extends the linguistic-textual nature of metonymy and metaphor to other forms of art such as cinema and cubism (instances of metonymic acts) as well as theater and surrealism (instances of metaphorical acts). Although Jakobson’s article has been criticized for its absolute dichotomization of metaphor and metonymy,⁹¹ among other things, some contemporary scholars of cognitive linguistics clearly affirm his extension of metonymy towards other areas of reality and realism. Gibbs [1999a: 61], for example, uses an example from Balzac’s realistic novel *Père Goriot* to illustrate the nature of metonymy, because “[l]ike many 19th century fiction writers, Balzac provides wonderful examples of metonymic descriptions in which the concrete depiction of some object or person stands for or represents larger objects or domains of experience.” Barcelona [2002: 211] argues that in addition to artistic styles and narratives,⁹² acts of metonymic mappings also underlie the function of “paralinguistic and non-linguistic” symbols and even iconic bodily gestures in which we imply a more comprehensive situation or meaning via a simple, intended bodily expression. Moreover, in ‘Towards a Theory of Metonymy’, Radden et al. [1999: 21] account for this universal and partly conceptual, partly realist nature of metonymy by holding that “[m]etonymic processes are thus not restricted to reference: they occur at the purely conceptual level (categorization, linguistic reasoning), at different levels of language (lexis, morphology, syntax, discourse), in different linguistic functions (reference, predication, speech acts), and as a linkage interrelating different ontological realms (concepts, forms, and things/events).” Littlemore confirms this

⁹⁰“The primacy of the metaphoric process in the literary schools of romanticism and symbolism has been repeatedly acknowledged, but it is still insufficiently realised that it is the predominance of metonymy which underlies and actually predetermines the so-called ‘realistic’ trend, which belongs to an intermediary stage between the decline of romanticism and the rise of symbolism and is opposed to both. Following the path of contiguous relationships, the realist author metonymically digresses from the plot to the atmosphere and from the characters to the setting in space and time. He is fond of synecdochic details. In the scene of Anna Karenina’s suicide Tolstoj’s artistic attention is focused on the heroine’s handbag; and in *War and Peace* the synecdoches ‘hair on the upper lip’ and ‘bare shoulders’ are used by the same writer to stand for the female characters to whom these features belong.” [Jakobson 2003: 43]

⁹¹Cf. Bredin [1984b].

⁹²“In narrative and/or descriptive discourse it is quite common to mention or to allude only to certain aspects, or certain subsets, of the event sequence to be narrated or of the entities or the scenario to be described.” [Barcelona 2002: 212]

universalization of metonymy by pointing out that metonymy “has been found to play a role in a wide variety of different modes of communication and meaning creation, such as art, music, film and advertising.” [Littlemore 2015: 8] The fact that metonymic thinking, being “an everyday process which plays a key role in helping us make sense of the world” [id.: 191], is thus widespread and universal⁹³ indicates that language is not isolated from the world and its meaningful ontological and experiential domains. “Many of the principles determining vehicle selection correspond to people’s everyday experiences with the world, which illustrates an underlying cognitive linguistic premise that language is by and large both a reflection and product of our everyday interactions with the real world.” [id.: 36] Finally, Bredin argues that unlike metaphor, metonymy presupposes knowledge about the world, as the objects of a metonymic mapping must be known before the mapping takes place.⁹⁴

The complex relationships between metaphor, metonymy and synecdoche are impossible to determine once and for all, particularly not within the limits of the present investigation. However, if we only regard metonymy and synecdoche and base ourselves on recent research in cognitive linguistics, it seems that metonymy both consists of PART-TO-WHOLE and WHOLE-TO-PART mappings and that it mainly concerns phenomena and objects in reality, not only ones that are conceptual-linguistic in nature. This finding is significant for the present investigation, because firstly, it shows that metonymy is a conceptual-linguistic way of thinking and expressing such that PWO is indeed identifiable in ordinary language. Secondly, the realist or reality-directed tendency of conceptual metonymy, which makes it differ from synecdoche’s now proper scope of abstract taxonomic hierarchies, indicates that metonymic part-whole relations might characterize objects and events in the world that are not only conceptualizable and linguistically expressible, but empirically perceptible and phenomenologically experienceable in the first place. The existence of the PART-WHOLE image schema, which connects mental acts of metonymic mappings with a more basic sensorimotor domain that is our bodily interaction with the world, also points in this direction.

We can now combine the research finding that there is a bidirectional co-activation of source and target within one and the same experiential domain with the research finding concerning the universal and realist nature of metonymic part-whole relations. This combination yields the conclusion that objects and events, including situations, persons, artistic styles, ways of communication, sense data, symbols, gestures, etc. are meaningful *for* us partly because we experience their inherently double-sided yet unitary nature of oscillating between (backgrounded/foregrounded) parts and (foregrounded/backgrounded) wholes as ‘meaning of’. In other words, there is a need to address the possibility of whether metonymic part-whole relations (‘metonymic PWO’) are processes that are preconceptual, prelinguistic and even exist prior to their being embodied as the PART-WHOLE image schema. These are admittedly vague

⁹³“Metonymy is everywhere. It shapes the way we think and the way we influence the thoughts of others. Meaning is underspecified in all forms of communication, leaving much of the interpretative work to the reader, viewer or listener. Metonymic thinking forms the core of this interpretative work and is something that we engage in all the time in order to extract meaning from language and other forms of communication.” [Littlemore 2015: 197]

⁹⁴“A metonymy neither states nor implies the connection between the objects involved in it. For this reason, it relies wholly upon those relations between objects that are habitually and conventionally known and accepted. We must *already know* that the objects are related, if the metonymy is to be devised or understood. Thus, metaphor *creates* the relation between its objects, while metonymy *presupposes* that relation.” [Bredin 1984a: 57]

and speculative conclusions that transcend the appropriate research area of cognitive linguistics and suggest work partly in the field of the psychology of perception (Gestalt theory), partly in the field of ontology itself, for which the former can serve as a valid method. This direction towards Gestalt theory and/as ontology, however, is the way to go if any *comprehensive* determination of the ontological nature of PWO is to be given. Therefore, I would like to conclude this chapter in the following section and give further indications there of how to proceed given the research findings on conceptual metonymy and its enormous significance for a *preliminary* determination of PWO's ontological nature.

5.3 The Identification of PWO as Conceptual Metonymy

Ontological knowledge about the nature of reality is only hypothetical without an answer to the critical question of how we can have such knowledge in the first place. In this sense, the purpose of chapters 4 and 5 was Kantian in spirit. Chapter 4 started out with the hypothetical notion of PWO that followed from the conceptual analysis intrinsic to Husserl's part-whole ontology in the second chapter. This conceptual analysis was an answer to what I call the meta-ontological *quaestio facti*: Where and how do we have which ontological categories from? Before any bottom-up approach concerning the conditions for this knowledge can take place, it is necessary to factually determine which object of hypothesized knowledge it is that we are dealing with. It is impossible to justify the existence of something without firstly determining what this something is supposed to be. The second chapter's pairing of the two parameters *reality* and *part-whole* within the Husserlian ontology of the 3rd LI then led to a characterization of PWO that strongly suggested transcending the framework of conceptual analysis and turning to what I call the meta-ontological *quaestio iuris*: How can we justify the hypothetical knowledge that we have gained via a priori reasoning concerning the ontological nature of – in this case – PWO? What are the conditions for this knowledge? For several reasons, given in the first, methodological chapter, we have seen that the *quaestio iuris* is answerable by drawing on empirical findings: Firstly by research on natural language and common-sense reasoning, secondly by research on perception. The former approach, developed in the context of cognitive linguistics, showed that the notion of PWO is identifiable as conceptual metonymy and that the condition for the conceptualization and linguistic expression of PWO lies in our embodied cognition and perception of part-whole relations due to our interaction with the world around us. Let me briefly summarize the route that has led to this conclusion and give three positive characterizations of PWO as conceptual metonymy, before I indicate the next station which the *quaestio iuris* necessitates in order to be sufficiently answered.

First of all, the concentration on natural language demanded a theory or a complex of theories for the analysis to be carried out. To fulfill this need, I focused on cognitive linguistics in general and the (co-authored) works of M. Johnson in particular. The former has the advantage of not isolating language from other areas of reality, which makes it more plausible to connect this method with the other methods used in the present investigation. The latter is one of the few cognitive linguists who not only embeds this empirical approach in a philosophical framework, but who also raises questions about meaningfulness and experience of a general concern, which is what makes Johnson's take on cognitive linguistics stand on scientific, philosophical as well as

common-sense grounds. This accentuation of *meaning* and *experience*, which are the two other parameters next to *reality* and *part-whole* that form the pillars of this project around which the research question is structured, suggested distinguishing three layers of *meaning*. As I explained in subsection 4.1.1, the first layer relates to the deductive method of conceptual analysis. It takes the parameter *meaning* to be propositional meaning ($\text{meaning}_{\text{prop}}$) and replaces *experience* with a priori, purely formal reasoning. Johnson argues strongly against the ‘autarchy’ of this first layer for the philosophical as well as everyday meaning of *meaning*. He does so by showing that propositional meaning is just one aspect of *meaning* in a broader sense, or rather: *as* a broader sense, as sense-making of what I have called a ‘*meaning of*’ in interconnection and correlation with a ‘*meaning for*’.

This understanding of *meaning* as general meaningfulness, i.e. as valuableness and profoundness of situations in which we take part, can already be classified as the third layer of *meaning* ($\text{meaning}_{\text{sit}}$), not the second. The second layer consists in the meaning of empirical perceptions ($\text{meaning}_{\text{perc}}$): visual meaning, auditory meaning, cross-modal meaning, etc. Although Johnson’s emphasis on $\text{meaning}_{\text{sit}}$ is accurate on its merits, it is his own explicitly empirical method that prevents him from getting hold of the complete experiential dimensions of this third layer beyond what is merely perceptible with our senses and physically interactable with our bodies. However, what was needed and what Husserl’s formal part-whole ontology could only allude to was exactly what Johnson in particular and cognitive linguistics in general do propose. This was an empirical method that analyzes ordinary language and relates it both to abstract thinking (through which PWO had been hypothesized in the second chapter) and – via our body and its sense organs – to the reality with which we interact. It is in this reality in which our thinking and language are embodied and our bodies are ‘enworlded’ that dynamic part-whole structures could be situated as a condition for their implementation in our body, thinking and language. This holistic view of gradual transitions instead of ontological dichotomies then presupposes a non-dualistic unity of mind, body and world, for which Johnson argues on the empirical grounds to which his inductive method is restricted, regardless of his equally relevant accentuation of $\text{meaning}_{\text{sit}}$ (4.1.2).

Since the better part of Johnson’s work is concerned with conceptual metaphors, the first question I wanted to ask was whether PWO can be identified in language as a conceptual metaphor (4.2). In line with the aforementioned holistic presupposition of an inseparable continuum between language, mind, body and world, we saw that a conceptual metaphor is more than just a linguistic trope. As a *primary* conceptual metaphor (4.2.1), it is deeply embedded in our bodies’ interactions with the environment. In fact, primary conceptual metaphors are the result of the unconscious connection between the sensorimotor domain (consisting of body-environment interactions and embodied image schemata) on the one hand and an experiential domain (consisting of direct Gestalt-like experience and sociocultural background) on the other hand. In the case of primary conceptual metaphors, there is a direct correspondence between or ‘conflation’ of the sensorimotor and the experiential domains. Only in a second, mostly equally unconscious step and with the occurrence of an additional experiential domain for which there are no primary metaphors available, do we map a primary metaphor from the first experiential domain, i.e. the source, to the second one, i.e. the target. The result of this unidirectional mapping is a *complex* conceptual metaphor (4.2.2). Many semantic expressions in ordinary language, in particular concerning abstract objects and events, are complex conceptual metaphors,

e.g. A PURPOSEFUL LIFE IS A JOURNEY. In this example, we have a socioculturally influenced experience of what a purposeful life entails, but in order to conceptualize and express this experience, we need to ‘import’ primary metaphors originally belonging to another, more bodily and thus more basic experiential domain: a ‘journey’, as the particular spatiotemporal movement of an object from *A* to *B* and maybe further, and a ‘purpose’, which is the destination of a journey.⁹⁵ This act of mapping takes place between a source domain and a target domain which differ experientially. Hence, metaphorical mapping is a *cross-domain* mapping (4.2.3). In cross-domain mappings, an element that serves as a metaphor is selected from the source domain and mapped into the target domain due to its similarity with the conceptually missing element in the latter domain. After this act of mapping, the original context of the element in the source domain is substituted by the target domain, such that the source domain is mostly not only backgrounded, but conceptually as well as experientially disappears in its entirety.

This is one of the reasons why PWO cannot be classified as a complex conceptual metaphor: The parts of an entity and the entity as a whole belong to one single experiential domain due to the necessary correlation between parts and whole. But PWO can also not be a primary conceptual metaphor. Since I am interested in an ontological determination of PWO, the only category that lends itself to this kind of determination would be what Johnson and Lakoff call ‘ontological metaphors’ (4.2.4). These are a sub-type of primary metaphors and are derived from either physical entities or physical containers in the sensorimotor domain. The characterization PWO_{ded} in section 2.3, however, excludes it from the realm of physical-material objects, because it is pieces and not moments that are constitutive of such objects. Moreover, although PWO can easily be mistaken for the displaying structures of a physical container, it cannot be explained by such structures. This is firstly because a part as a moment in PWO is simultaneously dependent (inseparable) and independent (distinguishable) from the whole, whereas a part of a container is *either* inside the container (as a dependent part, if its existence hinges on the existence of the container) *or* outside the container (as a piece), but not both at the same time. Secondly, physical containers cannot be applied to dependent part-whole relations, because they imply that what is contained can be moved from the inside to the outside of a container and vice versa. Dependent parts of wholes, however, are not movable without alterations in the modes or conditions of their existence. Thirdly, a container can exist without containing anything, but a whole, either composed of pieces or of moments, does not exist without *any* parts, because wholes and parts are correlative. Thus, PWO is not an ontological primary conceptual metaphor and therefore neither a primary metaphor nor a complex metaphor.

In order to investigate if there is another category apart from conceptual metaphors in ordinary language and everyday thinking with which PWO can be identified, it was necessary to find an appropriate image schema beforehand (4.3). To do so, I touched upon the notion of image schemata in general (4.3.1): how they come into existence via meaningful body-environment interactions; how they exist as recurring structures of our meaningful being in the world; how many there are approximately; how they can be discovered via phenomenological introspection and linguistic research; how universal and intersubjectively shared they are; how they display a rich and flexible internal structure; how and with which caveats they are visualizable, and how they not only give rise to conceptual metaphor, but also to conceptual metonymy. Using several of these characteristics of image schemata in general, I delineated the PART-WHOLE

⁹⁵Cf. Lakoff [1994: 80].

image schema (4.3.2): how it comes into existence via the fact that our bodies have parts and via our interactions and perceptions of basic-level objects; how it is internally structured into the parameters WHOLE, PART and CONFIGURATION; how it is combinable with other image schemata; how the CONFIGURATION parameter includes both contiguity, adjacency, continuity and temporal stability; how asymmetry and irreflexivity are sufficient but not necessary laws for part-whole relations, and how the PART-WHOLE schema can be visualized as a mosaic-structure for (in)dependent part-whole relations in general and as a fractal for PWO in particular. Finally, I showed that the PART-WHOLE schema *not only* leads to conceptual metaphor (opposed to my argumentation in 4.2.4), but also to conceptual metonymy, especially when we are focusing on parts, the existence of which depends on the whole they are correlated with.

For this reason, the second question was whether or not PWO could be identified as the structure that underlies conceptual metonymy (4.4). To do so, I had to go beyond Johnson's own take on cognitive linguistics, as his works mainly concentrate on metaphor and mention metonymy only marginally in comparison. What Johnson does mention and what was informative to begin with, however, are three aspects of conceptual metonymy that have been extensively discussed in the subsequent literature on this topic: firstly conceptual metonymy as a *stand-for* or substitution relation based on contiguity in contrast to conceptual metaphor as an *is-like* relation based on similarity; secondly the sufficiency of a single experiential domain in which metonymic source-target mappings can take place in contrast to conceptual metaphor's cross-domain mapping; and thirdly the metonymic co-activation of source and target as sub-domains of the experiential domain in contrast to the deactivation of the source domain in conceptual metaphor.

The first point I discussed in 4.4.1 and concluded that, contrary to Johnson's (and Lakoff's) original approach, which was partly based on Jakobson, conceptual metonymy generally does not rely on a *stand-for* relation based on contiguity. This is because contiguity is already included in the single experiential domain approach and is therefore not an additional characteristic. Moreover, a *stand-for* relation implies that the target replaces the source instead of leaving the latter's presence intact. Also, there are kinds of metonymy (in particular predicational metonymy) in which the approach of defining metonymy as a *stand-for* relation does not work at all. This refusal of the *stand-for* relation based on contiguity allowed me to pursue further the question of whether PWO can be identified as conceptual metonymy, because, similarly to the mapping between source and target in metonymy, the interplay of parts and whole can take place only if one side is not fully substituted or superseded by the other.

Concerning the second point, I showed in 4.4.2 that current research on conceptual metonymy after Johnson and Lakoff basically confirms the one-domain hypothesis. Radden, for example, demonstrates how both correlation and complementarity occur in singular experiences and lead to metonymic reasoning. Whereas Johnson and Lakoff, however, postulate a multiplicity of metonymic kinds of source-target mappings, there is a strong tendency in the recent literature on this topic to reduce metonymic mappings to only two kinds: PART-TO-WHOLE (domain expansion) and WHOLE-TO-PART (domain reduction). Characterizing conceptual metonymy with these two kinds of mappings makes it possible to find a place for PWO in ordinary language, in particular because it does justice to the peculiar quality of PWO according to which the whole is also in the parts (how else could a part imply its whole without the whole being already somehow present or at least latent in this part?). As a further advantage, the determination of

PART-TO-WHOLE and WHOLE-TO-PART as the only two kinds of metonymic mappings accounts for a clear continuity of the sensorimotor domain with the PART-WHOLE image schema into the experiential domain in which metonymic mappings are carried out, among others as linguistic expressions. This means that, additionally to and stemming from the positive determination yielded by the deductive method in chapter 2,

PWO_{ded} A part-whole oscillation (PWO) is the dynamic interplay of moments and whole within the same entity. It occurs when during the fusion (continuation) of moments and whole both moments and whole become distinguishable (discontinuous) as well. During their continuation, the moments and the whole stand out alternately and the entity in question displays both the qualities of the moments and the potentially different or even contradictory qualities of the whole.

the now applied inductive method with its first concentration on the cognitive structure of natural language yields three further positive determinations of PWO's ontological nature. The first additional determination, which describes the causal pathway, is the following:

PWO_{ind_lang_1}: A part-whole oscillation (PWO) occurs in natural language, because due to our body/environment interactions, we develop a PART-WHOLE image schema which makes for perceptually and situationally meaningful experiences of part-whole structures. In so doing, this image schema contributes to shape our abstract thinking (our concepts) and is therefore linguistically expressible. Furthermore, the PART-WHOLE image schema has the capacity of being structured like a mosaic in general and like a fractal in particular, which means that the whole can be regarded as iterated and occurring in (one or more of) its parts.

As an alternative to a *stand-for* relation, in 4.4.3 I then presented positions that understand metonymy as a co-activation of source and target such that the source provides mental access to the target, for example by picking out one salient feature of it. To describe this co-activation of source (parts/whole) and target (whole/parts) as an *interactive* relationship, some scholars draw on Gestalt theory's notions of figure and ground, thus, in interactive terms, of *backgrounding* and *foregrounding*. The metonymic source does not disappear, but is merely backgrounded when the target is (co-)activated. Furthermore, what is in the background can be foregrounded again, which implies a bidirectional relationship between source and target. Thus, in conceptual metonymy, we can always switch from the whole to the parts and back again via acts of backgrounding and foregrounding. This remarkable phenomenon describes precisely the idea of an *oscillation* between parts and whole and therefore affirms the identification of PWO in ordinary language as conceptual metonymy.⁹⁶ In other words, further positive determinations

⁹⁶Here it should be mentioned that conceptual metonymies are not the only linguistic instances of figure-ground relations. In his 2011 paper 'Figure-Ground Reversals in Language', M. Thiering shows in the context of embodied cognition how the perception of figure-ground relations generally influences spatial semantics in different natural languages. He argues that such relations "are very often linguistically reversed and do not follow perceptual or objectively given clues. [...] Hence, there is a mismatch between the given gestalt and the linguistic encoding pattern." [Thiering 2011: 247] This is because the latter also "depends on the speaker's choice of what s/he ascribes as being foregrounded or rather backgrounded." [id.] We do not often have such a choice in visual perception, for which objects and their arrangements are externally given. It would be worthwhile to investigate whether this kind of freedom of choice regarding the determination of figure and ground is also the case for perceptual metonymy or only for the topological relations of propositions, on which Thiering concentrates in this paper.

of the ontological status of PWO can be now be based on the following research result: PWO does exist – hypothetically among other things, which means that I remain neutral concerning its ontological status – in ordinary language as conceptual metonymy, because it unconsciously exists as one variant of the embodied PART-WHOLE image schema that itself comes into existence via certain recurring body-environment interactions relating to part-whole relations. The second positive characterization then describes PWO’s manifestation as conceptual metonymy:

PWO_{ind_lang_2}: A part-whole oscillation (PWO) occurs in natural language as conceptual metonymy. Unlike a conceptual metaphor, a conceptual metonymy relates to one homogenous experiential domain and allows for a whole in / the whole of this domain to be either *backgrounded* (domain reduction: WHOLE TO PART) or *foregrounded* (domain expansion: PART TO WHOLE) such that one or more of its parts are either *foregrounded* or *backgrounded* in return. The part-whole structure of a conceptual metonymy is thus not only interdependent, but also co-active and bidirectional, i.e. both the parts and the whole are conceptually present and thus retrievable at any time. This means that they can ‘oscillate’ by continually switching into each other.

Finally, clarification was needed regarding the traditionally controversial relationship between metonymy and synecdoche. Johnson and Lakoff subsume synecdoche, as a PART-TO-WHOLE mapping, under metonymy, which comprises several other kinds of mapping in addition. However, if metonymy itself is reducible to PART-TO-WHOLE and WHOLE-TO-PART mappings, then one half of metonymy would be synecdoche and we could no longer speak of a subsumption. In current approaches to metonymy and synecdoche, a different solution has been found: Whereas PART-TO-WHOLE mappings are understood as genuinely belonging to metonymy, synecdoche is only supposed to denote taxonomic categories.⁹⁷ Taxonomic categories are more or less artificial hierarchies of GENUS-SPECIES classifications that have their origin in our minds, i.e. they are mind-dependent. Metonymy on the other hand is taken to be reality-dependent and generally refers to entities in the outside world. Although this distinction between mind and reality is itself artificial and can be refused, especially on cognitive linguistic grounds of embodiment, it reveals an ontological and realistic dimension of metonymy that does not often come to the surface in the rather language-centered discussions of contemporary cognitive linguistics. A rather reality-directed interpretation of metonymy on the background of a rather mind-directed take on synecdoche without thereby implying a strict dichotomy between reality and mind, however, does indeed do justice to the fact that we find metonymic PART-TO-WHOLE and WHOLE-TO-PART mappings not only in language, but – probably due to the universal PART-WHOLE image schema – also in forms of art, communication, narratives, symbols, gestures and all forms of meaning creation.⁹⁸ Thus, conceptual metonymy, and through it PWO, points from ordinary language, which is itself reality-based via the sensorimotor domain, to many other meaningful aspects of reality. However, cognitive linguistics is not ontology and for the most part, with the exception of, among others, Johnson and Lakoff, does not even have (and have to have) philosophical ambitions. At this point it is therefore difficult to determine in what way exactly it is permissible to extend ‘metonymic PWO’ to other areas of reality or even to conclude whether PWO can be identified as a process the existence of which does not necessarily hinge

⁹⁷Cf. Seto [1999].

⁹⁸Cf. Littlemore [2015: 191].

on our bodies, i.e. on the PART-WHOLE image schema that is constituted in the sensorimotor domain. Nevertheless, the reality-directedness or the inherent realism of conceptual metonymy that distinguishes it from synecdoche makes for a third positive characterization of PWO in the empirical domain of natural language as studied by cognitive linguists:

PWO_{ind_lang_3}: A part-whole oscillation (PWO) as conceptual metonymy is directed towards external objects and events. It is thus a linguistic and conceptual, yet body-based device or a ‘mental shortcut’ which helps us to conceptualize and express aspects of reality itself as against taxonomic categories of the mind. With conceptual metonymy, we think and linguistically express aspects of the experienced world around us in dynamical and meaningful part-whole mappings without, like in conceptual metaphor, changing the experiential domain in the transition from source (whole/part) to target (part/whole).

One way to continue from here is to ask how exactly part-whole structures appear in empirical perception. In other words, if the experiential domain consists of Gestalt-like perceptions that lead, among others, to conceptual metonymy, then how precisely do we perceive parts, wholes and their interplay in such perceptions? We have to turn to a discipline that has made such empirical investigations one of its proper subject matters in order to find out more about and perhaps correct the findings of the previous inspection of embodied ordinary language. Only then can the meta-ontological *quaestio iuris* of how and why it is justified to determine the ontological nature of an entity or process – in this case PWO – be answered satisfactorily. So how do we empirically perceive part-whole relations, in particular part-whole relations that are not mere agglomerations of material pieces? Significant research in this area has been conducted by Gestalt theory, which therefore seems to be a promising field to turn to. In particular, Gestalt theory has been concerned with the second aspect of the ontological nature of PWO as conceptual metonymy: the interplay, switch, shift, interface, or – as I prefer to call it – *oscillation* between figure and ground in terms of backgrounding and foregrounding. Since research on conceptual metonymy often refers to this process without going into details, we can ask what Gestalt theorists have found out about this process and whether or how it is possible to integrate some of their findings into the determination of the ontological nature of PWO.

Moreover, the third aspect of PWO’s ontological nature in conceptual metonymy is its reality-directedness. There is much potential for ontological investigations into the realism involved in our everyday, body-based usage of language, especially of conceptual metonymy understood as PART-TO-WHOLE and WHOLE-TO-PART mapping. Although Johnson and Lakoff claim to defend an ‘embodied realism’ and accentuate the importance of our “being in touch with the world” [Johnson et al. 1999: 95] in a pragmatic sense, their research is explicitly centered on concepts and language,⁹⁹ which is implicitly the case with the less philosophical majority of

⁹⁹In Johnson et al. [2002], for example, Johnson and Lakoff refuse to be ‘traditional philosophers’ who are concerned with mind-independent entities in the outside world. Instead, their claim is “that conceptual metaphors map a source domain ontology with its inferences onto a target domain ontology - often creating new conceptual entities and forms of reason in the process. [...] But in traditional philosophy, the only real ‘ontology’ consists of mind-independent real objects in the world. If you mistakenly think we are talking about this ‘ontology’, then our claims indeed become senseless: how could a metaphor create a physical entity in the world?” [id.: 260] However, if the basis of all our thinking and language, i.e. image schemata, come into existence via body-environment interactions, then one could indeed ask the ontological question what

work in cognitive linguistics in general. Here again it is Gestalt theory that seems promising to offer a helping hand for the elucidation of a part-whole ontology within the ontological region of perceptible reality. With which ontological hypotheses does Gestalt theory explain the acts of part-whole perception and figure-ground shifting? How do part-whole relations appear with meaning in our everyday perception of the world around us? How helpful is/are Gestalt theory's understanding(s) of part-whole relations, i.e. what Albertazzi [2015: 28] calls "Gestalt mereology"? I agree with Buhrmann et al. [2015: 22], who conclude in a similar context that "the experience of agency [...] is relational in nature, i.e. fundamentally world-involving, rather than internal to the brain. It is constituted by structures or processes in our active exploration of the world, by properties or modes of the relation between agent and environment." Let us therefore turn to Gestalt research and continue to interconnect this project's four parameters *part-whole*, *meaning*, *reality* and *experience* in order to give a more complete answer to the meta-ontological *quaestio iuris* and its inductive approach concerning the ontological nature of PWO.

it is that our bodies are interacting with. To put it plainly: What exactly is this environment, understood as reality or world? I think we should not bracket this side of the interaction when we want to discover how our thoughts are embodied, because our bodies are necessarily 'enworlded' as well.

6 Gestalt Theory I: Part-Whole Dependency

6.1 Why and How to Approach Gestalt Theory

Since conceptual metonymy is based on the perception of Gestalts in the experiential domain,¹ it is incumbent on us to acquire a better understanding of the notion of ‘Gestalt’. In a first attempt to characterize it, we could say that a Gestalt is a complex yet uniform entity which can be a content of perceptual experience, in other words, it is a perceptible *unity in diversity* and/or a perceptible *diversity in unity*. Its complexity or diversity consists in its internal organization of parts, which can be understood as individual stimuli for our sensory nervous system. Its uniformity or unity consists in its being directly perceived as a unity, the quality or qualities of which is/are emergent and therefore different from the individual as well as in any way summarized qualities of the parts. The evidence and inductive generalizability of what is undeniably there in perception goes beyond the logically ostensible contradiction of a simultaneous complexity/diversity and uniformity/unity. If we were to compile an ontological inventory of a whole’s parts and their qualities, then the whole itself – understood as a Gestalt – would neither be *on* this list (the Gestalt is different from and thus not any of its parts), nor *be* this list (the Gestalt is not the sum of its parts). What instead the entity of a Gestalt comprises in an ontological sense is the object of investigation that the present chapter undertakes. But already this broad and preliminary characterization, which is nota bene not a definition,² allows for a plenitude of examples. One of them would be that the single words of the present text do not appear as arbitrary sums of letters but as meaningful unities, which is not the case for a sequence of letters. This example illustrates one of the underlying insights of Gestalt theory: there are principles of part-organization, such as the parts’ mutual proximity and good continuation, not only in the example of letters and words just given, which make us perceive a whole as more complete and uniform, even as more meaningful, orderly and concise (*prägnant*)

¹Radden et al. [1999: 47–8], for example, accentuate this point: “A powerful organizing principle for our perception is the tendency to see whole gestalts rather than the sum of their parts. The gestalt-perceptual principle also applies to the selection of a preferred vehicle in metonymy and accounts for the wide-spread use of humans and whole objects for their active-zone parts. Metonymy [...] WHOLE THING FOR A PART OF THE THING as in *The car needs washing* is thus well-motivated.”

²Simons [1988: 163] states that ‘Gestalt’ is almost impossible to define, because this concept is too general and differently understood by different thinkers. The only thing we can do is to get a (approximately) clear idea of it and provide examples and characteristics, although these alone – as he argues in Simons [1986: 116–7] – are insufficient for developing a definition. Perhaps the most logically stringent attempt at defining Gestalts can be found in Rescher et al. [1955], Grelling et al. [1988] and Rausch [1967]. These definitions, however, rely on advanced terminological frameworks and particular preconceptions of ‘Gestalt’, which is why it would be counterproductive to present them here in the context of an intuitively accessible outline.

³which is not the case for this dependent clause

than a less well-organized constellation of parts would do.

A less well-organized constellation of parts would not yield distinguished and distinguishable groups. It would rather accentuate the parts' individual qualities instead of contributing to the uniformity, meaning and thus perceptual primacy of the whole. What is more, each individual letter stands in a function to the word it is part of and receives from this whole, including the part's neighboring parts and the whole's neighboring wholes, certain qualities (e.g. a corresponding pronunciation, an ordering into syllables, a change due to contractions) it would not possess in isolation. For these qualities, or, in more ontological terms, for these functional modes of existence, the part thus depends on its being organized in a certain way within a more embracing whole. The same is the case in other areas of perception, for example in the organization of single musical tones within/to create⁴ melodies or in the transformation of individual visual stimuli such as dots and lines into/for the emergence of⁵ more comprehensive perceptual wholes. These are examples and areas of perception that I will be concerned with in this chapter. They are genuinely empirical in nature, and, as such, either discovered in laboratory experiments or at least made evident by direct examples, in particular of visual images. This is why Gestalts that are researched in these empirical ways correspond to the inductive method of ontology, i.e. to the meta-ontological *quaestio iuris* of how to justify the existence of an a priori postulated entity.⁶

Since the beginning of the 20th century, an enormous amount of literature has been published on Gestalts in general and on their empirical perceptibility in particular.⁷ Historically, the notion of a Gestalt as a complex yet uniform and experienceable entity can be explicitly traced back to Goethe's studies on the metamorphosis of plants⁸ and implicitly to Kant's forms of intuition.⁹ Of major importance are also the philosophical and early psychological works of E. Mach¹⁰, W. Wundt¹¹, C. Stumpf¹², and F. Brentano¹³ - to mention just a few influential figures.¹⁴ Most scholars, however, identify the birth of systematic empirical research on Gestalts either with C. von Ehrenfels' influential 1890 article 'On "Gestalt" Qualities',¹⁵ in

⁴In these preliminary remarks on the Gestalt problem, I will leave open the question of whether the whole is ontologically prior to its parts or not. It is only in the next sections (6.2–6.4) and in chapter 7 that I discuss different positions concerning this issue.

⁵Cf. the previous footnote.

⁶Cf. section 1.3, especially subsection 1.3.2.

⁷Cf. Smith [1988b] for an extensive and annotated overview until the year 1988. For a survey of recent research on this topic, particularly in psychology and vision science, cf. Wagemans et al. [2012a; 2012b]. On the etymology and terminological history of 'Gestalt' cf. Zimmer [2001] and Bonacchi [2015].

⁸Cf. Goethe [2009]. In a recent article, S. Poggi [2016: 147] remarks in this regard that "we must remember the widely acknowledged thesis that we are indebted to Goethe for the introduction of the *Gestalt* notion (or concept) in order to designate what we now mean by *Gestalt*."

⁹Cf. Metzger [2006: xvii, 41] and Wade [2012: 330].

¹⁰Cf. Mulligan et al. [1988] and Ash [1995: 62–4, 87–8].

¹¹Cf. Ash [1995: 22–27, 61–2] and Metzger [2001: 55–6].

¹²Cf. Stumpf [1873], Smith [1994: 255–6, 269], chapter 2 in Ash [1995], Allesch [2014] and Kaiser-el-Saifi [2014].

¹³Cf. Ash [1985: 305], Smith [1994] and Boudewijnse [1999: 7].

¹⁴Cf. Herrmann [1976], Ash [1995] and Harrington [1996, esp. 103–139] for three of the most detailed studies on the history of Gestalt theory. Also cf. Grossmann [1977] for a critical philosophical discussion of Gestalt theorems in the light of Gestalt theory's history; Metzger [1976] for an overview of how Gestalt theory developed in the American exile; Fitzek [1995] for a reflection on the proper historiographic method to approach Gestalt theory; Plaum [1996] on its political (mis-)understandings, and Toccafondi [2002] on its reception, for example by J. Piaget, M. Merleau-Ponty and K. Popper.

¹⁵Cf. for the original German text Ehrenfels [1988c] and for the English translation by B. Smith, which I will

which Ehrenfels demonstrates mainly via the example of musical tones and melodies that on the foundations of parts, a whole can have qualities that are independent of the parts and is therefore transposable (e.g. the same melody can be played in different octaves or with a different instrument). Other scholars attribute the origin of Gestalt theory, or more precisely the origin of ‘Gestalt psychology’ that is often associated with the Berlin school of Gestalt theory,¹⁶ to M. Wertheimer’s study on apparent motion, i.e. the so-called ‘phi phenomenon’, in which two alternately flashing lights at a certain sequence produce the impression of pure movement that, in turn, is irreducible to the static light signals.¹⁷ Although Ehrenfels is closely associated with the Graz school of Gestalt theory, of which – among others – A. Meinong, V. Benussi and S. Witasek were notable members, whereas Wertheimer and his colleagues M. Köhler, K. Koffka and K. Lewin were – among others – members of the Berlin school that had a different theoretical stance towards the ontological status of Gestalts,¹⁸ both Ehrenfels and Wertheimer have in common a critique of atomism and associationism. These were epistemological as well as psychological stances according to which an overall sensory impression is the sum of punctual sensations and can therefore be analyzed into its atomic constituents, which are unified not according to underlying, unifying principles, but associated according to their accidental contiguity in space, time and memory.¹⁹

One major difference between Ehrenfels and Wertheimer, however, concerns the way they relate the notion of Gestalt to the hierarchical relation between parts and whole. This difference is a philosophical one, because it touches upon the ontological question of grounding: Is it the whole that grounds the parts or rather the parts that ground the whole? In other words, does the whole or do its parts enjoy ontological primacy, both within the domain of perception and beyond? This is a fundamental question that the earliest proponents of Gestalt theory such as Ehrenfels and the Graz school as well as Wertheimer and the Berlin school were concerned with in order to provide a groundwork for their discussion of part-whole perception. It even determines the definability of Gestalts themselves and can, of course, only arise if parts are

draw on in the present project, Ehrenfels [1988a]. Smith himself, for example, allows Gestalt theory to begin with Ehrenfels’ article: “The essay initiated a current of thought which enjoyed a powerful position in the philosophy and psychology of the first half of this century and has more recently enjoyed a minor resurgence of interest in the area of cognitive science [...]” [Smith 1988a: 11]. Fabian [1986] provides a comprehensive depiction of Ehrenfels’ life and academic as well as artistic work in a broader historical context.

¹⁶Klix [2001], however, uses the term ‘Gestalt theory’ to describe W. Köhler’s (Berlin school) hypotheses on *physical* Gestalten. More often than not, however, these two terms are used interchangeably, which I will also do in the present project, for which the history of Gestalt thinking and its schools is of minor importance.

¹⁷Cf. Wertheimer [1912] and for a detailed discussion Sekuler [1996]. Wagemans et al. [2012a: 1–4], for example, allow Gestalt theory to begin with Wertheimer’s study, but also refer back to Ehrenfels as the person who introduced the Gestalt concept into psychological research.

¹⁸Cf. on these schools and on the whole institutional background of Gestalt theory in the beginning of the 20th century Ash [1985; 1995], Boudewijnse [1999] and Cat [2007].

¹⁹Hochberg [1998: 254] provides a compact summary of this stance: “Through repeated simultaneous and successive associations, a frequently-encountered *proximal* pattern of stimulation provides a set of local sensations, and their memory images are bound together as a learned unit which in turn becomes associated with *distal* properties of layout, reflectance and distance. All shape and pattern perception starts therefore with such fundamental local visual sensations, each spatially tagged by its local sign [...]. The content of any perceived or imagined object is the set of sensations and images mutually associated by the object that provided them. Those associations comprise a structured mental representation.” Cf. also Koffka [1925: 510–525], Katz [1969: 9–14] and Metzger [2001: 48–54] on Gestalt theory’s concerns with atomism and associationism.

understood as dependent moments that stand in a vertical relation to a whole.²⁰ We will see that even in some current empirical research on Gestalt phenomena, this question of part-whole-primacy as one of the ontological dimensions the identity and existence of perceptible Gestalts entails still resonates in the background and is closely connected to perceptual meaning, i.e. to what I specified as MEANING_{PERC} towards the end of subsection 4.1.1.

At the same time, many purely descriptive and quantitative approaches to Gestalt perception do not reflect on the presence or absence of perceptible Gestalts in reality itself. In this regard, at the end of her study on the conception of Gestalt in the cultural and literary history of Germany between the 18th and the 20th century, Simonis [2001: 385] concludes how surprising it is that despite the contemporary dominance of scientific research on Gestalts, this concept could never really dissociate itself from its ontological and metaphysical heritage. “Only in the domain of metaphysics, the Gestalt conception actually comes to itself and probably finds its greatest power of expression and persuasiveness.”²¹ In addition, Smith [1988a: 69] provides a similar conclusion concerning the ontological dimension of the idea of Gestalts and its need for further clarification: “[...] a truly adequate mastering of the philosophical difficulties which surround this idea has never really taken place. [...] Such philosophical, and above all ontological, clarification is needed, for, without an awareness of the nature and interrelations of the objects with which it deals, an empirical science is in a certain sense performing experiences in the dark.”²² Already in 1922, Wertheimer, who was well aware of Husserl’s 3rd *Logical Investigation*,²³ pointed out the ‘significant philosophical consequences’ of Gestalt theory.²⁴ Thus, even a tentative elucidation of the ontological dimension of Gestalts, in particular regarding the hierarchical relation between parts and their organization as being either prior to (i.e. inde-

²⁰Cf. sections 2.2.5 and 2.2.6 above.

²¹Own translation. The original passage reads: “Das sich in den genannten neueren naturwissenschaftlichen Beispielen abzeichnende Vordringen gestalthafter Wahrnehmungstheorien in die sogenannten *hard sciences* muß den Laien wie den Spezialisten um so mehr überraschen, als die Logik der Gestalt sich von ihrem metaphysischen Erbe nie hat völlig lossagen können und – selbst da wo sie einer funktionalen Perspektive unterzogen wird, insgeheim einen Hang zu ontologischen und substanzialistischen Modellen verrät. Auf dem Gebiet der Metaphysik kommt die Gestaltkonzeption erst eigentlich zu sich selbst und findet hier ihre wohl größte Ausdrucksstärke und Überzeugungskraft.” [Simonis 2001: 385]

²²Silva-Tarouca [1960: 344] makes an even stronger claim, here in relation to the concept of Gestalt as developed by von Ehrenfels: “Von einer primär *philosophischen* Fruchtbarkeit zu reden, ist ja schon deshalb gestattet, weil *Ehrenfels* selbst sein Konzept als eine philosophische Neuerung vertreten hat. Inzwischen ist freilich die methodologische Klärung durch Wissenschaftstheorie und Grundlagenforschung über ihren damaligen Stand weit hinaus gediehen. Das Konzept Christian von *Ehrenfels*’ mag darum heute als eher der wissenschaftlichen Psychologie als der spekulativen Philosophie und Metaphysik zugehörig erscheinen. Unbestritten aber bleibt, daß es eine *systematologische* Herausforderung gerade an das philosophische Denken ideell und tatsächlich war und ist. Diese Herausforderung hat sich derart vielfältig und intensiv ausgewirkt, daß man kühn die Unentbehrlichkeit des Gestalt Denkens für die Philosophie der Gegenwart behaupten darf. Vorsichtig möchten wir sie so formulieren: Ohne jedes Mitdenken der Gestaltetheit gibt es kein den Menschen voll erfassendes Philosophieren.” Cf. on the need for philosophical/ontological clarification of the Gestalt idea also Smith [1994: 282].

²³“Evidently Wertheimer had begun to investigate the problem of form. During this period [1905-1910, M.S.], or perhaps still earlier, he read Husserl’s *Logical Investigations* on the problem of whole and part [...] and noted on a scrap of paper that Husserl had not sufficiently considered ‘the ontological aspect’ of the problem.” [Ash 1995: 108] Cf. also Luchins et al. [2015: 95] on Husserl’s influence on Wertheimer and cf. Toccafondi [2011], who states that despite this influence, there has practically never been a detailed discussion of Husserl’s phenomenology by Gestalt theorists, with the exception of K. Duncker.

²⁴Cf. Wertheimer [1922: 54]. On the relation between philosophy and Gestalt theory in a more historical perspective, cf. Leahey [2003], Cat [2007] and Toccafondi [2011].

pendent of) or secondary to (i.e. dependent on) the whole they form or are formed by, should be of theoretical interest. From such an elucidation, other ontologically interesting aspects of Gestalt theory, in particular concerning perceptual meaning, the presupposed emergence of new qualities and the notions of ambiguity and multistability, as well as the critical realism underlying the theories of major Gestalt theorists, will follow. However, whereas the latter might shed light on the ontological *status* of Gestalts (where do they exist, if at all?), it is the questions of primacy, meaning, emergence and ambiguity/multistability which mirror the hitherto discovered ontological *nature* of PWO in conceptual metonymy. Therefore, I will begin with the question of primacy (sections 6.2 – 6.3) and see how it leads us to the other ones (6.4 and chapter 7), while the issue of the ontological *status* has to be postponed to a follow-up research.

Such an ontological approach to Gestalts would, however, be pointless without a focus on concrete questions and without a convincing reason why empirical Gestalt research is not just supposed to concern mere ontic or even mental phenomena instead of fundamental ontological structures of reality. The reason why Gestalt research matters ontologically and not just ontically is that such research is ultimately concerned with the possible relations between parts and the whole. These relations are ubiquitous and fundamental, they are not just to be found in some entities and not in others,²⁵ which is also why reflections on part-whole-relations, including Gestalts, is ideally interdisciplinary. Experimental research on how and why we perceive perceptible manifestations of part-whole-relations is therefore a significant method, i.e. a way to understand these kinds of relations in general. Such a method is especially useful with respect to the ontological determination of the dynamic ‘in-between’ of parts and wholes: their shifting or switching, their oscillation. We saw in the second chapter’s discussion of Husserl’s formal and material ontology that this determination is impossible to conduct in a purely conceptual, a priori way, because it leads to internal inconsistencies. In other words, empirical research is not only inevitable for the ontological determination of PWO, but it can also be highly fruitful, as became evident in the previous chapters’ perspective taken by cognitive linguistics. This perspective allowed for the identification of PWO as the underlying structural dynamics of conceptual metonymy, and it has been fruitful, because in doing so, it has established the focus with which concrete questions on Gestalt theoretical research can be asked.

Firstly, conceptual metonymy, understood as embodied PART-TO-WHOLE and WHOLE-TO-PART intra-domain mapping, takes place in an experiential domain in which we perceive the world around us in a meaningful, organized way. We think and communicate in metonymies because we constantly perceive part-whole relations within or as one coherent impression, and we constantly perceive such relations because we have embodied them as the PART-WHOLE image schema. This is what the first characterization of PWO in ordinary language (PWO_{ind_lang_1})

²⁵On this point, I agree with Meirav [2003: 1], who states that “[o]n the face of it, almost anything we care to think about may be considered as a whole and as having parts, or as being itself a part of some greater whole. In attempting to understand ourselves and our environment, we divide or analyze (a whole into parts), we collect or synthesize (parts into a whole), we discern many parts composing one whole, and one whole composed of many parts. When, aspiring to understand, we reflect on the things we see, hear, imagine or conceive, on everyday objects, on sentences or melodies, on historical events, on our own actions, on mathematical structures, on the products of art, on space and on time, on reality considered metaphysically or theologically – we are almost irresistibly led to consider them in the light of the notions of whole and part.”

amounts to. The question I would like to address to Gestalt theoretical approaches towards part-whole relations concerns this experiential domain and the appearance of interdependent part-whole relations therein. What is it that appears as being more fundamental: the parts, the whole, or their relation of interdependence? In other words, how do we – equipped with our sensory nervous system – perceive possible founding relations between parts and a whole, such that the idea of a Gestalt can be defined and perhaps even the ontological nature of PWO further developed? Let us call this the question of ‘perceptual part-whole primacy’. From an elucidation of this basic question, the other questions will follow.

The second concrete question is predicated on the act of foregrounding and backgrounding that appears to be constitutive of conceptual metonymy (PWO_{ind_lang_2}). If we assume that conceptual metonymy is one area in which such an act can take place and if we further assume – in the framework of cognitive linguistics as depicted in chapters 4 and 5 – that conceptual metonymy relies on Gestalt perceptions within an experiential domain, then it is plausible that theories on Gestalt perception can tell us more about this momentum of foregrounding and backgrounding. What are the perceptual characteristics of figure-ground reversals and how are they applicable to the postulated primacy or the back-and-forth shifting of parts and whole in perception? Let us call this the question of ‘perceptual part-whole reversal’.

Thirdly, in section 5.2.4’s distinction between synecdoche and metonymy, it appeared that contemporary cognitive research attributes to the latter a strong reality-directed tendency (PWO_{ind_lang_3}). The pursuance of such a tendency, according to which the metonymic backgrounding and foregrounding of parts and whole is a more universal and reality based phenomenon than the *prima facie* purely linguistic and conceptual connotations of metonymy might make us believe, is not only promising for general ontological research. It raises in particular the question of how and into which ontological framework Gestalt theorists embed their own findings. Thus, next to the primacy of parts or whole and next to the momentum of figure-ground reversal, it is worthwhile to ask Gestalt theory for an elaborated model of reality that puts in place the kind of entity a Gestalt is, including its momenta of becoming, reversing and elapsing. Let us call this the question of ‘perceptual part-whole reality’. Unlike the previous two questions, however, this question will not be answered in the present project, because it involves research on the ontological status of Gestalts and/as PWO, not just on its ontological nature. However, the significance of this question consists in its addressing a complete framework, model or system of reality as a whole into which PWO *could* be embedded as one constitutive aspect. Nonetheless, instead of *answering* this third question, we can at least *formulate* it. Let me do this together with more precise formulations of the other two questions to find a way through the maze of research on Gestalt perception.

The question of perceptual part-whole primacy relates to the subject of dependency and founding. This subject is currently being discussed in ontological debates on grounding, i.e. on the general issue of ‘what grounds what’.²⁶ In the context of the relations between perceptible parts and whole, there are, in principle, four possibilities of part-whole-dependence. Firstly, perceptible parts and whole can be identical such that there is no part-whole-dependence at all. This means that it is neither the parts that found the whole nor the whole that founds the parts, but that the whole is nothing other than the arbitrary aggregation of parts. Arbitrary

²⁶Cf. for example the seminal article by Schaffer [2009] and the contributions in Correia et al. [2012].

here means that there is no special organization of parts, no ‘reciprocal determination’.²⁷ In the discussion of the Husserlian notion of pieces and their mutual founding relations²⁸ as well as in the reflection on material composition and mereology,²⁹ we saw that this is mainly the case for material pieces. As the analysis of such pieces requires a mathematical-logical and/or physicalist approach, Gestalt theorists have often called the resulting aggregates ‘summative’ wholes or ‘and-conjunctions’ (*Und-Verbindungen*) and distanced themselves from this option of classifying all types of part-whole relations.³⁰

There are, however, three other possibilities left, and it is here, in the realm of ‘suprasummativity’, that we can find significant differences among Gestalt theoretical approaches in terms of founding relations. Although these three remaining possibilities all state that there is a difference between parts and whole, they disagree in the attribution of dependence. Unlike the flat ontology involved in the first possibility, the second and the third one presuppose a vertical hierarchy in which either the parts found the whole or the whole founds the parts. In the first case, the factor that makes the whole different from the parts is just an additional quality, a Gestalt quality, which is added to the already existing qualities of the parts. The most influential and philosophically profound Gestalt theorist who argued in favor of this position is Ehrenfels, which is why I would like to delineate his position first (section 6.2). Then, with the rise of the Berlin school of Gestalt theory in the first decades of the 20th century and its demarcation from the Graz school, to which Ehrenfels was closely connected, a third possibility of part-whole dependence has come into play and still prevails in contemporary Gestalt research: the perceptual primacy of the whole, i.e. the being determined of the parts by the whole (section 6.3). It is then the whole and its supra-summative qualities alone that usually defines the nature of a Gestalt and determines how stimuli, as preperceptual parts, are perceived.³¹

Whereas both part-primacy and whole-primacy imply a unidirectional foundation and therefore a hierarchy of either ‘bottom-up’ (the parts found the whole) or ‘top-down’ (the whole founds the parts), the fourth possibility offers an alternative by suggesting a two-sided dependency of parts and whole. This alternative view of conceiving part-whole primacy is not implausible, as the discussion of conceptual metonymy’s underlying bidirectional part-whole structure has demonstrated.³² By considering several arguments from contemporary Gestalt-theoretical research, I will fathom how likely this fourth possibility may be and how suitable it is for defining the idea of a Gestalt and identifying PWO as a Gestalt understood in this

²⁷“We have a ‘pure’ aggregate when the reciprocal determination between all parts is absolutely or practically zero.” [Grelling et al. 1988: 200]

²⁸Cf. subsection 2.2.5.

²⁹Cf. section 3.1.

³⁰“In the first place, viewed from the gestalt-theoretical standpoint, the essential feature of this stimulus situation is that *it is not simply an ‘additive’, ‘plus-summed’, ‘there’ and ‘there’ and ‘there’ of single lines which appears, not simply a ‘juxtaposition’ given in a ‘piecemeal’ way. We have here a paradigm of a specific ‘collocation’ into characteristic ‘unities’, a ‘collocation’ in which the single lines, the single constituent parts, appear no longer as unrelated ‘elements’, but rather as ‘participants’ in something ‘whole’ - as belonging, for the time being, to the white area of the patch with which they appear, for the time being, to be coalesced in pairs.*” [Petermann 1932: 141-2]

³¹“In general, it is useful to distinguish Gestalt parts (in a person’s perception) from stimulus parts (in the environment). Gestalt parts evolve from an interaction among the representations of stimulus parts, even if the stimulus parts themselves do not change, so that the whole determines how a stimulus part is perceived and whether it becomes a Gestalt part.” [Wagemans et al. 2012b: 4]

³²Cf. sections 5.2 and 5.3.

way. For the present project, the plausibilization of a two-sided part-whole-dependence is important, because the hypothesis of an ongoing oscillation between parts and whole would certainly benefit from an elucidation of a bidirectional founding relation of parts and whole in the experiential domain of Gestalt perception. Usually and apart from studies on figure-ground perception, Gestalt perception is researched via empirical examples of ‘perceptual grouping’, in which Gestalt principles such as proximity, good continuation or similarity are taken as special cases³³ of the more general tendency towards a ‘good’ and ‘simple’ (*prägnant*) Gestalt,³⁴ where the whole appears not only as a ‘larger’,³⁵ but also as a more complete and ordered object than its parts. To present clear examples, it is thereby helpful to highlight within the experiential domain items such as drawings of dots, lines and geometrical shapes or tones and melodies, which should always be understood as representing a more embracing and realistic real-world environment.³⁶

All in all, the aim of this chapter is to explore different positions of Gestalt theory to further determine the ontological nature of PWO. As in the previous chapter, the method with and therefore the domain in which this determination takes place is empirical. Empirical here simply means two things. Firstly, it means that the research results of the discussed theories can, in principle, be generalized inductively although they are derived from a limited amount of perceptual and experimental data, and secondly, that there would be no access to the reality of the phenomena in question without the active role of our senses. Since the equally empirical approach to ordinary language in the context of cognitive linguistics has resulted in three crucial research findings concerning firstly, the unity of the experiential domain, secondly, the act of foregrounding/backgrounding and thirdly, the reality-directedness involved in conceptual metonymy, it is now required to follow these cues and thus to focus on the prelinguistic and preconceptual level. This level has to be preconceptual, because the notion of PWO goes against a clear demarcation of whole and parts as stable, i.e. unambiguous concepts that alone suffice for a formal ontology: It both excludes itself from the conceptual problem of infinite proliferation that a part-whole difference entails and it necessitates the idea that a whole must be somehow contracted in its parts while still serving as a whole.

These impasses that are involved in a purely conceptual analysis of PWO, however, are not the reasons for also going beyond ordinary language. On the contrary, the fact of linguistic usage of metonymy and the reason why metonymic structures are meaningful to us has proven to be an indication of the existence of a dynamic and reciprocally founding interaction between parts and whole. But while the cognitive linguistic framework in which this process has been identified

³³Cf. Metzger [2006: 21]. But cf. Pinna [2011a: 224–6], who shows how the principle of similarity by reversed luminance contrast can conflict with *Prägnanz* (and other principles).

³⁴“According to the *Prägnanz* principles, the visual system determines the formation of objects on the basis of the simplest, the most regular, ordered, stable, balanced, rather than the most likely, organization of components consistent with the sensory input.” [Pinna 2011a: 222]

³⁵Cf. Goldstein [2010: 106].

³⁶This is in line with Guberman’s [2015: 26] recent statement that “[...] Gestalt psychology is based on analysis of human-made linear and dotted drawings [...]. These images are tools for human communication. The second feature of these drawings is their discrete nature: each image could be described as a set of strokes – lines that could be drawn with no stops and no interruptions. These strokes are the elements, the building material, for constructing the Gestalt.” Such simple drawings, but also simple examples from the musical sphere, thus allow for an intelligible and reproducible illustration of part-whole perception, even specified to questions of part-whole primacy.

points to the domains of direct empirical perception, image schemata and sensorimotor body-environment interactions, it is itself mostly concerned with the level of language in a semantic and pragmatic sense. To overcome the contingencies involved in language usage and to flesh out the experiential as well as experienceable levels prior to ordinary language and conceptual thinking, however, more systematic research on the embodied perception of part-whole relations is needed. This is why the inductive *quaestio iuris* of meta-ontology can be divided into ordinary language³⁷ and experimental research:³⁸ to apply the latter as an extension to and perhaps a corrective of the former. Only in so doing is it possible to provide a satisfactory account of the meaning of part-whole interactions in embodied language *in consequence of* sensory perception.

6.2 One-Sided Dependency I: Parts Found the Whole

In a simple manner which is not intended to exclude intermediary stages, the concatenation of foundation and part-whole relations yields four possibilities:

- (1) There is no founding relation between parts and whole.
- (2) Parts found the whole but are not founded by the whole.
- (3) The whole founds the parts but is not founded by the parts.
- (4) The whole founds the parts and the parts found the whole.

Foundation means that if b is a necessary condition for a 's existence, then a is founded by b . If a is founded by b , then a is dependent on b ; and consequently: If a is not founded by b , then a is independent of b .³⁹ We are familiar with these notions of part-whole foundation from the prior discussion of Husserl's part-whole ontology.⁴⁰ When we now investigate the possible foundation relations of parts and whole in the realm of empirical perception, i.e. in what a 'material ontology' is about according to Husserl, and thereby enter into the discourse of Gestalt theory, it is essential to add another set of correlative parameters: external stimuli and internal percepts. External stimuli descend from the mind-independent environment and are therefore physical in nature and mathematically approachable. For example, the typical two-dimensional surface of a laptop is a rounded rectangle, i.e. a rectangle with rounded edges. In order to calculate the surface area, it is therefore insufficient to just multiply the length with the width. Instead, a more complex equation that involves π is needed to approximate each of the four rounded edges.⁴¹ As an internal percept, however, we usually perceive the surface of a laptop as a regular rectangle with quadrilateral edges (edges with an angle of 90° each). It is only on closer examination that the actual roundness of the edges is recognized. The whole external stimulus in question is thus a rounded rectangle, while the whole internal percept is a regular rectangle; the four rounded edges as stimulus parts are omitted in the perceived shape. In the overall impression, they turn into inconsiderable quadrilateral edges as perceptual parts.

The stimulus whole with its stimulus parts and the perceptual whole with its perceptual parts

³⁷Cf. subsection 1.3.1.

³⁸Cf. subsection 1.3.2.

³⁹Cf. Smith [1986: 118-9] and cf. Tahko et al. [2016] for an elaborated discussion of ontological dependence with useful distinctions which I cannot take into consideration here.

⁴⁰Cf. chapter 2, especially subsections 2.2.5 and 2.2.6.

⁴¹The correct formula to compute the area A would be $A = ab + 2r(a+b) + \pi r^2$.

Cf. <http://mathworld.wolfram.com/RoundedRectangle.html> (last visited on 7 December 2019).

(or ‘Gestalt parts’ for that matter⁴²) are thus to be distinguished, albeit only functionally and heuristically. But is it correct to say that there is a qualitative difference between stimuli and percepts? Is it not just a quantitative difference such that an arbitrary number of stimuli are merely added together into one percept, so that the percept, as an *association* of stimuli, can, in return, be fragmented into its *atomic* constituents? And does qualitative difference between the perceived whole and its parts and the external stimuli not just indicate the wrongness of a perception and could it therefore explain perceptual illusions? This stance that corresponds with possibility (1) would delimit the application of a foundation relation to the stimulus parts, “without external assistance” [Husserl 2001: 34] by a qualitatively different whole. What is given in perception would thus be only a continuation of congenial and, as such, independent stimuli, and an arbitrary number of the latter would point like a vector to the content of the former. Then a stimulus whole *should* not be different from a perceptual whole for the latter to be adequate, which is safeguarded by hypothesizing a constant one-to-one excitation of our sensory nervous system by single, independent stimulus parts that can, but do not have to, aggregate in order to exist. The nature of external stimuli would thus be analogous to the nature of material pieces. It is on the historical stage of the late 19th century on which such a positivist ‘mechanization of perception’ or “atomistic orthodoxy” [Smith 1994: 244] enjoyed dominance, and against which even the argumentation in favor of possibility (2) must have been quite unorthodox.⁴³

6.2.1 Ehrenfels and Gestalt Qualities

Presumably it had only been in the field of aesthetics in which a deviation from this positivist paradigm was in some degree conceivable. It is therefore with reflections on aesthetic phenomena that Ehrenfels’ 1890 paper ‘On Gestalt qualities’ starts out,⁴⁴ demonstrating how, with the distinction between external stimuli and internal percepts, there can be a one-sided foundation relation where a diversity of stimulus parts found a perceptual unity. This demonstration begins – probably Ehrenfels’ most famous example – with a melody. A melody is presented to us via individual tones, which are simply the external stimulus parts. The sum of these individual tones is a complex of elements, is “a sum of presentations of successive single tones with distinct and mutually exclusive temporal determinations.” [Ehrenfels 1988a: 85] In other words: the stimulus whole is the sum or the complex of the stimulus parts. So far this is in line with the

⁴²“In general, it is useful to distinguish Gestalt parts (in a person’s perception) from stimulus parts (in the environment). Gestalt parts evolve from an interaction among the representations of stimulus parts, even if the stimulus parts themselves do not change, so that the whole determines how a stimulus part is perceived and whether it becomes a Gestalt part.” [Wagemans et al. 2012b: 4]. Nota bene, this statement presupposes the point of view that tends to postulate the perceptual primacy of the whole over its parts, cf. section 6.3.

⁴³“The point that is relevant in this context is that the Gestalt theorists did not oppose the views of any single individual, but rather the elementistic and mechanistic assumptions about consciousness shared explicitly or implicitly by all attempts to present psychology as a natural science in the nineteenth century. The breadth and vehemence of their attack lend credence to the suggestion that theirs was a part of a widespread revolt against positivism in European thought at the turn of the century.” [Ash 1995: 60]

⁴⁴“Die ästhetischen Phänomene haben jedenfalls einer aggregathaft-atomistischen Interpretation stets am kräftigsten widerstanden. Es ist daher auch kein Zufall, daß Christ. v. Ehrenfels durch Beobachtungen an ästhetischen Objekten (Melodien) auf seine grundlegend neuen, die reine Summenhaftigkeit und den reinen Aggregatcharakter des seelischen Geschehens verneinenden Einsichten geführt wurde.” [Ehrenstein 1960: 122]

atomistic view (1) sketched in the previous paragraph. Ehrenfels even agrees that it would be incongruous if one assumes, with a certain reading of Mach, that the stimulus whole differs from the stimulus parts and that the former can be immediately sensed without any intervention on the side of the perceiving consciousness, merely with what Mach calls ‘muscular sensations’ (*‘Muskelempfindungen’*).⁴⁵ At the same time, Ehrenfels observes that in a perceived melody, what is present is not a succession of individual tones such that our consciousness of the melody could be divided into single percepts that are supposed to correspond with the single stimuli. Instead, what is required for a melody to be a melody “is an impression of the whole series of tones.” [id.: 84] This overall impression, as the perceptual whole, thus differs from the stimulus whole, because it would be an “unjustified analogy” [id.: 86] to equate the physical and the psychological sphere. It is an incontrovertible fact that one single consciousness is physiologically able to transform a multiplicity of stimulus parts into the unity of a perceptual whole (e.g. a melody) instead of perceiving the unity of a stimulus whole (e.g. a set of successive tones) that can also offer the explanatory ground for the fact that this perceptual whole differs from the stimulus whole.⁴⁶ Hence the well-known slogan that a whole is – not necessarily *more*, but possibly – *different* from the sum of its parts. The proof for this claim in the example of the melody is the following: while a predefined series *A* of the finite tones $a_1 \dots a_n$ and a predefined series *B* of the finite tones $b_1 \dots b_n$ can result in the same melody *M* (for example by being played in another octave, interval or tonality), an arbitrary reassembly of $a_1 \dots a_n$ or $b_1 \dots b_n$ into another sequence would yield the same sum of tones,⁴⁷ but not the same melody.⁴⁸

The thus proven difference between stimulus whole and perceptual whole consists in an additional quality that is neither possessed by any of the stimulus parts nor by the stimulus whole; a quality that makes the perceptual whole therefore *suprasummative* compared to the stimulus whole. Ehrenfels calls this a ‘Gestalt quality’ and defines it as follows: “By a *Gestalt quality* we understand a positive content of presentation bound up in consciousness with the presence of complexes of mutually separable (i.e. independently presentable) elements. That complex of presentations which is necessary for the existence of a given Gestalt quality we call the *foundation* [*Grundlage*] of that quality.” [id.: 93] In other words, a perceptual whole is a unity of consciousness that consists both of a Gestalt quality, which is a perceptual part⁴⁹ of this whole that is not physiologically given, *and* of the stimulus whole as a sum of the stimulus parts, which is physiologically given and by which the perceptual whole is founded.⁵⁰ The perceptual

⁴⁵Cf. Ehrenfels [1988a: 84] and Mulligan et al. [1988: 125–9].

⁴⁶“That component part of the physiological precondition of a manifold of presentations which determines that the presentations occur *in a single consciousness* can also serve as the precondition for the appearance of a new element as it were hovering over the given complex of presentations.” [Ehrenfels 1988a: 88]

⁴⁷“Charakteristisch für eine Summe ist, daß sie dann existiert, wenn ihre Teile existieren, unabhängig davon, in welchen Beziehungen sie zueinander stehen – der Begriff der Summe läßt sich rein mereologisch definieren.” [Simons 1986: 119]

⁴⁸Cf. Ehrenfels [1988a: 90] and also Bühler [1913: 11].

⁴⁹Indeed, what Ehrenfels calls a ‘quality’ has to be interpreted as being a ‘part’ and less as an ‘attribute’. This is confirmed by Rausch [1966: 890]: “Der Begriff ‘Qualität’, der bekanntlich eine große Rolle gespielt hat [...], hat bei seiner Verwendung im Terminus ‘Gestaltqualität’ zwei verschiedene Bedeutungen angenommen: ‘Gestaltqualität’ ist entweder im Sinne eines Attributs verstanden worden oder im Sinne eines quasi substantiell existierenden, neuen Elements. [...] Die Ehrenfelssche Konzeption von ‘Gestaltqualität’ scheint mehr der zuletzt genannten Bedeutung zu entsprechen.”

⁵⁰Mulligan et al. [1988: 130] put it similarly: “Ehrenfels recognizes not only *complexes* [stimulus wholes, M.S.] of elementary perceptual data [stimulus parts, M.S.] but also special *qualities* [perceptual parts, M.S.] of

whole then displays a certain degree of invariance to changes in the stimulus parts, which is why it can be *transposed* in the sense of remaining identical when the stimulus parts (but not their mutual relations) vary. *Suprasummativity* and *transposability* have since been called by Köhler the two ‘Ehrenfels criteria’ for Gestalt qualities.⁵¹ The ontological foundation is thus still, in accordance with possibility (1), a complex of independent parts, which is what we have already come to know in the Husserlian context as a (material) ‘aggregation’ of (material) ‘pieces’. But it is not only in this sense that it is to the point when Smith [1994: 247] asserts that “almost all of the theoretical and conceptual issues which came subsequently to be associated with the Gestalt idea are treated at some point in the work [i.e. Ehrenfels’ paper, M.S.], at least in passing.”

6.2.2 Ontological Expansion of Gestalt Qualities

Besides the kind of one-sided dependency described above that results in perceptual wholes being founded by stimulus parts and their complexes, there are three other issues to be found in Ehrenfels’ article ‘On Gestalt qualities’ that are worth mentioning in the context of the present investigation. The first issue concerns the universalization of Gestalts and can – in the case of Ehrenfels – rightly be labeled an ‘ontological expansion’ of Gestalt qualities. This means that in the course of his paper, Ehrenfels allows for a considerably generous number of ontological domains the idea of Gestalt qualities can be applied to. Music, and thus the tonal or acoustic sphere in general, is only one domain in which Ehrenfels discovers this perceptual addendum that is not yet present in the physiologically received stimuli. The acoustic domain falls under the category of ‘temporal Gestalt qualities’, because it requires a certain time period to grasp a succession of tones. Temporal Gestalt qualities are created whenever a presentation of stimuli involves a change over time, such as in the change of tones that creates a melody, in spatial movement,⁵² color changes,⁵³ and even in the domain of inner perception that we could also denote as comprising tertiary qualities.⁵⁴ Non-temporal Gestalt qualities, on the other hand, are perceived in one single glance: harmony and timbre in the tonal sphere, instantaneous visual sensations and most perceptions of touch, taste, smell and temperature.⁵⁵ We also often perceive Gestalt qualities cross-modally when the stimuli received by two or more sensory organs together contribute to one unity of consciousness.⁵⁶

such complexes, and the formations [perceptual wholes, M.S.] we perceive are such as to involve both.” Interestingly, Mulligan [id.: 133] also offers a visual diagram of these interrelations.

⁵¹Cf. Köhler [1920: 35–37]. For a detailed explanation of the transposability phenomenon in the acoustic and visual sphere cf. Rausch [1966: 880–885] and for a logical analysis of summativity vs. suprasummativity cf. Rausch [1960; 1967].

⁵²To give an example of my own: The whole impression of climbing a mountain can be liberating and recreational, particularly after having reached the top, while every single move to pull upwards was confining and exhaustive.

⁵³Ehrenfels gives the examples of “blushing, blanching, darkening, glowing, etc.” [Ehrenfels 1988a: 98]

⁵⁴“What is certainly true, however, is that changes such as the waxing and waning of a desire, a pain, an expectation, if they become the objects of an inner perception are peculiar temporal Gestalt qualities, intertwining themselves with the remaining data of perception and analogous to a crescendo or diminuendo in the tonal sphere.” [id.: 101]

⁵⁵Cf. id. [96].

⁵⁶Cf. id. [97]. Among others, cross-modal perception is taken to be a significant process for the development of image schemata (cf. section 5.1).

Furthermore, the inner and outer perception of temporal and non-temporal Gestalt qualities is not restricted to objects, but expandable to relations between objects as well. Via the temporal mental act of comparing objects, for example Gestalt qualities such as similarity, incompatibility, change or duration come into existence, which Ehrenfels does not take to be ideal objects in the Meinongian sense, but rather direct inner perceptions founded by external stimuli.⁵⁷ Such Gestalt qualities of relation lead to two other domains in which Gestalt qualities occur: language and its underlying concepts. Every specification of the relational Gestalt qualities of change and duration “and thus every *verb* in the strict sense [...] designates a Gestalt quality of some type or other, as does every noun and adjective having reference to more than a single perceptual element. Thus Gestalt qualities comprise the greater part of the concepts with which we operate.” [Ehrenfels 1988a: 108] In addition, due to the fact that stimuli parts are given to us as being mutually independent, we can imaginatively restructure their perceptual counterparts such that new Gestalt qualities arise. This is the “creative activity of imagination” [id.: 109] and it is applicable both in the creation and in the perception of artworks. In short, the ontological expansion of Gestalt qualities by Ehrenfels significantly exceeds the scope of sensory perception and strives towards universalism and unity. Everywhere where some kind of experience plays a role or has played a role (e.g. for the constitution of concepts and language), Gestalt qualities are involved.⁵⁸ As he himself concludes, his “theory makes possible the unification, within a single framework, of what are superficially the most disparate phenomena.” [id.: 114]

6.2.3 Vertical Ontology of Higher Order Gestalt Qualities

The high number of ontological domains in which Gestalt qualities are supposed to occur on the one hand, and the comparatively limited number of atomic building blocks aka physiological stimulus parts for perceptual wholes on the other, raises the question about the augmentation of Gestalt qualities. How is it possible that mutually independent elements that reach our sensory organs can serve as the foundation for Gestalt qualities in ontological domains that even go beyond direct inner and outer perception, such as language, creative imagination, abstract relations and concepts? On the stimulus level, there can be no such augmentation, not only for the trivial reason that Gestalt qualities do not yet exist on this level, but also because stimuli parts themselves do not augment, since they are both mutually and holistically independent. If we understand stimuli parts as pieces in the Husserlian sense, then we can classify their ontological domain as being ‘flat’ or ‘horizontal’.⁵⁹ The parts in question exist spatiotemporally next to each other and their complexes are just an arbitrary collection that does not stand in any dependence relation to the parts. It is only with the coming into existence of Gestalt qualities and their one-sided dependence on the stimulus level that a certain verticalization

⁵⁷Cf. Smith [1988a: 23] and Boudewijnse [1999: 144], who writes in this regard that Ehrenfels “defined similarity as an immediate perceptual phenomenon; not a conceptual one [as did Meinong, M.S.], because analysis fails to come up with the reasons of the resemblance. He explained recognition of the same tune in different performances through the notion of gestalt qualities. Then he applied this concept to explain how we hear similarities between different melodies and notice family resemblances.”

⁵⁸As Smith [1994: 247] puts it: “Indeed, once the nature of Gestalten has been coherently established, the notion is in principle applicable to objects of all kinds of sorts and categories, irrespective of whether or not they serve as objects of experience on the part of actual conscious subjects.”

⁵⁹Cf. subsection 2.2.5.

occurs in which the stimulus level serves as a foundation for the perceptual level.

At first sight, it might seem that for every act of stimulus perception there is only one possible yet unavoidable emergence of Gestalt qualities. The emergence of a Gestalt quality in consciousness is unavoidable, because, for the most part, even without the active contribution of our consciousness the perceived whole comprises this additional part. Significantly, Ehrenfels [id.: 111] formulates “the hypothesis with strict generality as a proposition to the effect that ‘wherever a complex which can serve as the foundation for a Gestalt quality is present in consciousness, this quality is itself *eo ipso* and without any contribution on our part also given in consciousness.’” It therefore seems that what we perceive – when we perceive a perceptual whole consisting of a stimulus whole plus a Gestalt quality – is restricted to two hierarchical yet unchangeable levels, which makes the perceptual whole in question not further applicable to other ontological domains. Thus the question persists: How is it possible that Gestalt qualities are inferred to other, possibly non-perceptual domains?

To sense the tones of a melody, the visual stimuli of a tree or the elements constitutive for the unity of seeing, smelling and tasting a meal, for instance, is indeed a sufficient condition for the coming into existence of the respective perceptual whole that comprises a particular Gestalt quality. Such directly perceived Gestalt qualities can be classified to be of the first order. They are not only necessarily, but also immediately connected to their foundation. This means that just as a stimulus part s_1 can be spatiotemporally immediate to s_2 and mediate to s_3 in $s_1s_2s_3$ (e.g. the circles $\circ \circ \circ$), Gestalt qualities can also be immediate or mediate, either to each other or to the stimulus parts, just not in the spatiotemporal order of contiguity and succession.⁶⁰ If the Gestalt quality g_1 is of the first order, then it can be said to be embedded in the following simplified structure, whereby W_p stands for ‘perceptual whole’, W_s for ‘stimulus whole’ and not more than three stimulus parts are assumed (e.g. a triad chord or the three lines of a triangle): $W_p\{g_1 + W_s\{s_1 + s_2 + s_3\}\}$. Now, Ehrenfels argues, one way of achieving a Gestalt quality of a higher order is by comparing two Gestalt qualities of a lower order. If we compare $W_{p1}\{g_1 + W_{s1}\{s_1 + s_2 + s_3\}\}$ with $W_{p2}\{g_2 + W_{s2}\{s_4 + s_5 + s_6\}\}$, the result of the comparison, for example the insight that g_1 and g_2 are similar to each other, yields g_3 , which is the similarity relation holding between g_1 and g_2 : $W_{p3}\{g_3\{g_1 + W_{s1}\{s_1 + s_2 + s_3\}\} + g_2 + W_{s2}\{s_4 + s_5 + s_6\}\}$. Then g_3 is not immediately founded by the stimulus parts anymore, but only mediately via g_1 and g_2 . For example, two triad chords that sound similar but are played at different moments in time or by different musicians (hence the different stimulus parts) can thus be compared with each other and the result of this comparison can again be compared with other Gestalt qualities, e.g. g_3 with g_2 to elicit g_4 , which would be of a third order.⁶¹

To compare, however, is just one way to create Gestalt qualities of a higher order. They are also created by combining “presentational contents of physical and psychical occurrences – contents of the most conceivably different kinds – into integral concepts.” [id.: 107] According to Ehrenfels such combinations include: *all* kinds of human actions (both voluntary and involuntary), “all designations of human individuals or groups of whatever kind [...], as well as most

⁶⁰Cf. the similar discussion of Husserlian pieces and moments in subsection 2.2.6.

⁶¹“However things may stand precisely here, it cannot be disputed that a wealth of similarities is to be encountered amongst Gestalt qualities, and that, in the making of comparisons between these qualities, Gestalt qualities of a higher order are generated in the presentations of the relations thereby arising.” [Ehrenfels 1988a: 107]

designations for human corporations and institutions, all names of places and territories, and equally all names of animal species [...]” [id.] The here obvious ontological expansion of Gestalt qualities, which makes Ehrenfels conclude that “probably indeed more than half of all the concepts employed in everyday life belong to the given category [of higher order Gestalt qualities, M.S.]” [id.: 108], is thus justified by the assumption that from the basis of stimulus parts and their complexes, more and more Gestalt qualities of an increasing vertical order can and in fact do arise. Almost consequently, the non-spatiotemporal distance of these qualities from their original physiological building blocks is, in the majority of cases, only hard to guess.⁶² In any case, it is this vertical, continuously expanding hierarchy of dependent parts that undermines a predefined determinism, because with every level and additional Gestalt quality, ontologically new wholes, perceptual as well as non-perceptual ones, are generated.⁶³ This assumption of a dynamic, vertical augmentation of Gestalt qualities entails a high degree of ontological and therefore perceptual, conceptual, imaginative and cultural freedom.

6.2.4 Good, Bad and No Infinity of Gestalt Qualities

The vertical ontology of Gestalt qualities not only accounts for their origination, but additionally results in a certain conception of infinity. On a closer reading of Ehrenfels’ ‘On Gestalt qualities’, it is even possible to distinguish two kinds of infinity and one kind of finiteness. The first kind of infinity is entailed by the just-described augmentation of Gestalt qualities, for example via acts of comparison and combination, but also perception and imagination. In this upwards direction of augmentation, there is basically no upper limit for the coming into and remaining in existence of Gestalt qualities. Every ‘psychic act’ is unique and therefore yields a new combination of parts and wholes. Due to the “difficulty of precisely specifying and classifying the almost boundless range of possible Gestalt qualities involved” [id.: 106], Ehrenfels states that every attempt at “exact conceptual formulation” [id.] falls short of describing this kind of infinity. However, since this augmentation is based on the ontological freedom of creation and since almost all of the contents of perception and products as well as the progress of culture and higher thinking rely on this upwards infinity, we can categorize it – not without allusion to Hegel – as a ‘good’ infinity. In a terminological view, it is also ‘good’ in the sense that it allows for the creative freedom entailed by the German verb *gestalten*, which means to design or to shape and which has a quite positive connotation. This ‘good’ infinity then contrasts both with a ‘bad’ infinity and the conception of finiteness.

The ‘bad’ infinity can be labeled as ‘bad’, because Ehrenfels discusses it as a possible counter-argument to his theory, in particular to the just described ‘good’ infinity of creative freedom. The argument goes as follows: If we assume two elements e_1 and e_2 , which can be a stimulus

⁶²Applied to language, it might not be too far-fetched to draw a parallel here to the cognitive linguistic theory concerning the unconscious origin of abstract thought and conceptual metaphor/conceptual metonymy in the sensorimotor domain.

⁶³“For whoever has truly become convinced that something new is created through the combination of psychic elements will award the latter an incomparably higher significance than he who sees in psychic life only the continual displacement of eternally recurring components. Psychic combinations never repeat themselves with complete exactness. Every temporal instant of every one of the numberless unities of consciousness therefore possesses its own peculiar quality, its individuality, which sinks, unrepeatable and irreplaceable, into the bosom of the past, while at the same time the new creations of the present step in to take place.” [id.: 116]

part, a perceptual part or a Gestalt quality, and these two elements result in a third element e_3 , for example by an act of comparison, then the further comparison of e_3 and e_1 must yield e_4 and so forth. Then there would be an infinite proliferation of entities that would simultaneously entail “an infinite complication of conscious life” [id.: 88]. We have encountered the same kind of argument already in Husserl’s formal part-whole ontology above.⁶⁴ Ehrenfels refuses it by stating that although there is indeed a *possible* proliferation of entities that is involved in our ability to connect parts and wholes, it would be an exaggerated understanding of his theory to assume that this possible, ‘good’ infinity would immediately result in all the actual, infinite and therefore ‘bad’ consequences of element-proliferation.

First of all, normally we acknowledge only a limited number of actual relations between elements. Not every arbitrary combination of stimulus parts or Gestalt qualities is usually given or yields additional entities.⁶⁵ For example, if I see a wall (perceptual part p_1) and a field of grass before it (p_2), I do not necessarily see something p_3 that combines p_1 and p_2 , unless I clearly see a garden or a park to which p_1 and p_2 belong. In general, “for a given complex of presentational contents given in consciousness only those Gestalt qualities are present whose foundations stand out noticeably from their surroundings.” [id.: 113] Furthermore, Ehrenfels argues that in the same way in which we could but mostly do not discriminate every infinitely possible spatial determination of a colored surface, we also could, but in fact do not, relate every element in perception with every other element, although in principle there is a latent infinity in every perception. “If however infinite complexities in a conscious content were impossible, then so too would be presentations of plane surfaces, and we do in fact possess such presentations.” [id.: 89] In addition, the counter-argument is ‘bad’, because it rests on a logical fallacy: It presupposes what it argues against. In arguing that it is false that relating e_1 and e_2 results in e_3 , the counter-argument presupposes e_3 . In Ehrenfels’ words, it “presupposes that the Gestalt quality is given already with its underlying complex of presentations, i.e. without any additional activity on our part.” [id.: 88]

Finally, Mulligan et al. point out that the objection of infinite proliferation of entities does not apply if one advances the view, like Ehrenfels does, that there is a one-sided dependency of (perceptual) wholes on (stimulus) parts. Since the latter do not need the former to exist, it is not the case that any possible relationship between stimulus parts automatically yields Gestalt qualities, or that every combination of stimulus parts and Gestalt qualities of a lower order yields perceptual wholes with Gestalt qualities of a higher order. If this were not the case, i.e. if every complex of sensations were to proliferate infinitely because it relied on the existence of its products, then “we would once more be in no position to explain that characteristic unity and integrity of perceptual complexes which is in fact experienced.” [Mulligan et al. 1988: 131] In other words, if every arbitrary collection of stimulus and perceptual parts and wholes were to result in an infinite multiplicity, then what is perceived as a Gestalt quality within a perceptual whole could neither be analyzed nor explained, because the explanatory ground itself would be

⁶⁴Cf. subsection 2.2.5.

⁶⁵“[...] he who accepts the existence of Gestalt qualities is by no means committed to the view that all distinguishable presentational elements provide a foundation for such qualities and he certainly does not affirm that the co-existence of the Gestalt qualities themselves with their elements must give rise to yet further qualities. Only under this presupposition however is there any threat of infinite complication, and since we have no intention of extending our thoughts in the given direction, we can therefore dismiss the objection out of hand.” [id.: 88]

indeterminate and ensnared in countless sub-relations and meta-relations. This would be the case, for example, when we hear pure noise instead of music, because it is symptomatic only for the latter that is analyzable into simpler founding parts.⁶⁶

This analyzability into simpler parts indicates the finiteness involved in Ehrenfels' framework of one-sided part-whole dependency. Whereas in an upwards direction, there is a possible infinity of Gestalt qualities and therefore of perceptual and non-perceptual wholes, in a downwards direction, when all added, i.e. emerged qualities and parts are removed and the stimulus parts are isolated,⁶⁷ we encounter a finite number of stimulus parts. Although Ehrenfels allows for a differentiation of the stimulus and the perceptual domain with a potentially infinite augmentation of the latter even into non-perceptual domains, he at the same time carries the heritage of atomism forward by postulating such atomic building blocks that are themselves both separable from perceptual parts and indecomposable into smaller parts. These building blocks are the most basic stimulus parts and can therefore be classified as 'proto-qualities'. More extremely, Ehrenfels even hypothesizes that in the end, all the way down, there might be only one single proto-quality out of which all the other kinds of parts and wholes emerge.⁶⁸ The vertical dimension of Ehrenfels' theory of one-sided dependency thus combines the tendency for metaphysical order and unity that is hypothesized to prevail in the most basic level of the stimulus realm, such that there is "the possibility of comprehending the whole of the known world under a single mathematical formula" [id.: 116], with "individualistic tendencies to which – though in an altogether different direction [upwards, M.S.] – the theory also indubitably lends support." [id.]

Ehrenfels is well aware of the fact that both extremes will never be fully reached: Because we cannot fully free ourselves from the perceptual realm, the recognition of a pure, proto-stimulus element has to remain what can be called with Kant a 'regulative idea', and because of the possible infinity of part combinations in an upwards direction, it will never be the case that all possibilities will ever be realized (which is why the counter-argument of the 'bad' infinity does not apply). But even the mere hypothesis that there is a finite number of building blocks that are independent of their interrelations, i.e. their mutual founding relations, and the qualities thereof in perception and beyond leads to the conclusion that nothing of the 'higher' can be found in the 'lower'. This means that no trace or quality of the ontologically subsequent perceptual whole is supposed to be included and detectable in its constituent (stimulus) parts.

⁶⁶"Musical tone combinations, both harmonious and discordant, are distinguished from unmusical noises in the fact that in the former case we are capable, at least to a certain degree, of analysing the impressions involved, i.e. of separating foundation and Gestalt quality from each other and of distinguishing various parts of the foundation, where in the latter case foundation and Gestalt quality are fused into a whole in relation to which our attention is inadequate to discriminate the parts." [id.: 115]

⁶⁷It is, however, questionable whether the removal of additional qualities and the isolation of more basic parts indeed results in distinguished stimulus parts with fewer qualities. Smith [1994: 280] convincingly argues that "[r]arely, however does isolation of parts lead to a mere loss of properties: neither whole-properties nor part-properties are simply added extras which spring into existence at the moment of unification and disappear on isolation. For isolated parts *qua* isolated have peculiar features of their own, which depend on the one hand upon the peculiar features of their new environment and on the other hand upon what they bring with them from the old."

⁶⁸"And no conclusive argument can be brought forward even against the possibility that we may not, penetrating ever more deeply in this manner, finally arrive at a single proto-quality, or at least at a single quality-continuum, from out of which distinct contents (colors, tones, ...) are generated by the fusion of distinct combinations with the Gestalt qualities bound up therewith." [id.: 115]

Therefore, a switch or oscillation from the perceptual whole to the kind of parts on which it depends does not hold the whole and its Gestalt quality in the background and thus retrievable, but makes them disappear entirely, like an entity that is too comprehensive for a cone, the apex of which only the most basic part(s) can fill. For a further investigation into the ontological nature of PWO, Ehrenfels's theory of Gestalt qualities is therefore only partly useful, which is why now, as a next step, we will turn to an alternative Gestalt framework in which the one-sidedness of part-whole dependency is inverted.

6.3 One-Sided Dependency II: The Whole Founds the Parts

6.3.1 From Additional Gestalt Qualities to Immediate Gestalt Wholes

A good introduction to the inversion of one-sided part-whole dependency is given by Ehrenfels himself. Shortly before his death in 1932, he dictated to his wife a concise outline of the position he had held concerning Gestalt qualities. In this outline, he also addresses the topic of dependency. Well aware of the developments that had taken place after the publication of his just-discussed 1890 paper 'On Gestalt qualities', in particular of the nascency of the Berlin and the Graz schools in the beginning of the 20th century⁶⁹ that continued his own reflections on different epistemological and experimental grounds, Ehrenfels reaffirms his conviction that

"What is essential to the relation between the founded content and its fundament is the one-sided determination [*Bedingtheit*] of the former by the latter. Every founded content necessarily requires a fundament. A given complex of fundamental presentations is able to support only a quite specific content. But not every fundament must as it were be crowned and held together by a founded content. At least that was my view when I formed the concept of Gestalt quality. Others held a different view, that the Gestalt quality is necessarily given along with the fundament, and that the effort which we contribute – for instance in apprehending a melody – is not located in the production of the founded content, but merely in the noticing of it. Meinong and his pupil Benussi [main members of the Graz school, M.S.] adhered to the first view, while the second will be represented by Wertheimer and Köhler [main members of the first generation of the Berlin school, M.S.]." [Ehrenfels 1988b: 121–2]

This passage implies that from Ehrenfels' initial point of view, two differing lines of thought branch off: one that more or less holds on to the idea that there are basic elements that found higher elements aka Gestalt qualities via acts of psychological production (the Graz school), and one that locates the existence of Gestalt qualities already in the realm of the stimuli (the Berlin school). Ehrenfels' paper is thus commonly regarded as the groundwork for both schools and, in general, all later work in the Gestalt tradition.⁷⁰ While the Graz school can be said to build on Ehrenfels' own position regarding the one-sided dependency of perceptual wholes

⁶⁹Cf. for the history of Gestalt theory again the detailed works of Ash [1995] and Harrington [1996].

⁷⁰Cf. Rausch [1966: 876f].

on stimuli parts, the Berlin school seems to hold that there is a necessary connection between the fundament and the qualities that emerge from it, such that without these qualities, there would be no fundament. To me it seems that this implication is partly correct. It is correct in the sense that one of the main characteristics of the Berlin school is indeed the inversion of the one-sided dependency relation, which assigns to the whole an ontological independence and impact on its parts such that the latter need to evince the former in order to exist, at least as parts of the whole in question.⁷¹ The empirical and experimental field in which this inversion and its justification becomes the most evident is probably perceptual grouping, i.e. the principles for the arrangement of stimuli parts in order to be immediately perceived as parts that are dependent on a whole.⁷² Such empirical evidence for the dependency of parts on the ways they are arranged in a whole, however, relies on an epistemological and finally ontological stance that was clearly formulated by Wertheimer. According to him,

*“The given is itself in varying degrees ‘structured’ (‘gestaltet’), it consists of more or less definitely structured wholes and whole-processes with their whole-properties and laws, characteristic whole-tendencies and whole-determinations of parts. ‘Pieces’ almost always appear ‘as parts’ in whole processes. [...] Empirical inquiry discloses not a construction of primary pieces, but gradations of givenness ‘in broad strokes’ (relative to more inclusive whole-properties), and varying articulation. [...] To sever a ‘part’ from the organized whole in which it occurs – whether it itself be a subsidiary whole or an ‘element’ – is a very real process usually involving alternations in that ‘part’. Modifications of a part frequently involve changes elsewhere in the whole itself. Nor is the nature of these alternations arbitrary, for they *too* are determined by whole-conditions and the events initiated by their occurrence run a course defined by the laws of functional dependence in wholes. The role played here by the parts is one of ‘parts’ genuinely ‘participating’ – not of extraneous, independent and-units.”*
[Wertheimer 1938: 14]

The primacy given to the whole in this statement and more generally a tendency towards unification instead of differentiation can be regarded as the underlying paradigm not only of Wertheimer’s own research findings on Gestalts, but of the whole Berlin tradition of Gestalt theory.⁷³ If the ontological domain is restricted to empirical perception, i.e. to what is given to our senses, then it is a whole with its properties, internal structure and the influence it exerts on its parts that is the primary entity. On this point, it can be argued that this does not contrast with Ehrenfels’ own conviction. He himself states that “wherever a complex which can serve as the foundation for a Gestalt quality is present in consciousness, this quality is itself *eo ipso* and without any contribution from our part also given in consciousness.” [Ehrenfels 1988a: 110]

⁷¹This is, for instance, confirmed by Simons [1986: 117]: “Wichtiger sind die Merkmale, die Ehrenfels den Gestalten zuspricht. Sie sind erstens von anderen Gegenständen einseitig abhängig, d.h. wenn diese Gegenstände nicht existieren würden, so würde die Gestalt nicht existieren [...]. Diese vorausgesetzten Gegenstände sind die *Grundlage* [...] oder das *Fundament* [...] der Gestalt. Die Abhängigkeitsbeziehung ist nach Ehrenfels deswegen einseitig, weil das Fundament allein, ohne die darauf aufgebaute Gestalt, existieren kann [...]. Dagegen behaupteten Wertheimer und Köhler, eine Gestalt müsse [sic] existieren wenn ihr Fundament existiert.”

⁷²Cf. subsection 6.3.2.

⁷³Cf. Schönplüg [2001] on how and why German psychology of the early 20th century strove towards unity (*Ganzheit*), both in its research and as an academic discipline.

The combination of the stimulus parts and the Gestalt quality, which makes for the perceptual whole, is thus directly given to us and in this sense it is primary in perception. Boudewijnse even goes as far as to locate the ontological status of Ehrenfels' Gestalt qualities outside of the subject itself,⁷⁴ although Ehrenfels himself was, at least in his 'On Gestalt qualities', less clear about whether or not and to what extent the subject is involved in the creation of Gestalt qualities.⁷⁵ In any case, the essential difference from the view expressed by Wertheimer and his colleagues is that for them, the perceptual whole is primary in a much stronger sense, since it cannot be dispersed into its constituent parts again and thereby forfeit its quality of being a Gestalt. On the contrary, the perceived whole is not only perceptually⁷⁶ but also ontologically primary, because what makes it a whole is not already determined by the existence of the stimulus parts. Furthermore, the paradigm of the ontological priority of the whole entails the dependence of the parts on the whole in the sense that parts are determined by the whole 'as parts in whole processes'. Stimulus parts as atomistic building blocks in the sense intended by Ehrenfels, on the other hand, do not seem to undergo any existential change when they are enriched by a Gestalt quality and thereby integrated and organized into a perceptual whole.⁷⁷ Accordingly, Wertheimer [1944: 311] proposes that the "basic thesis of gestalt theory might be formulated thus: There are contexts in which what is happening in the whole cannot be deduced from the characteristics of the separated pieces, but conversely; what happens to a part of the whole is, in clear-cut cases, determined by the laws of the inner structure of its whole."

One of the first empirical proofs of the whole's independence on its stimulus parts and therefore of the just epistemological paradigm introduced above was given by Wertheimer himself in his experiments on apparent movement, i.e. what he calls the 'phi phenomenon'.⁷⁸ Simply put, when two or more lights at a close distance flash alternately in a certain sequence, then an observer clearly perceives movement between these lights that is not in turn reducible to the lights as stimulus parts, but is a stimulus in its own right: a pure stimulus movement directly given in perception without physical fundament. As Wagemans [2015: 4] describes it,

⁷⁴According to Boudewijnse [1999: 153], Ehrenfels "believed that perceived regularities of the stimuli are not put together into a meaningful whole in the observer. He held that those wholes exist outside the observer and that the parts of the whole belong together for reasons not related to the observer. The Berlin school continued in this tradition, believing that gestalten are out there and are reconstructed in the brain and then presented to consciousness."

⁷⁵Cf. on this question Simons [1986: 113] and Ash [1995: 90], who writes that "[o]ntologically speaking, the objects that have Gestalt qualities are not mere collections of properties; they are structures, not sets. But Ehrenfels himself did not clarify the nature of the complexes of which Gestalt qualities are qualities. Psychologically speaking, Gestalt qualities were neither sensations nor judgments. According to then-accepted categories, they were thus neither physical nor psychical. Whichever they were, the relation of such contents to the acts that generated them was unclear." Cf. also Ehrenfels' own *Weiterführende Bemerkungen* from 1922 [Ehrenfels 1988c: 165], in which he addresses this topic, but solves it in a way in which the qualities of stimulus wholes are real and confusingly also called 'Gestalt qualities', whereas the ontological status of the Gestalt qualities of perceptual wholes remains vague. It is not surprising then that Smith [1988a: 18] calls these *Weiterführende Bemerkungen* "sometimes rather cryptic".

⁷⁶Cf. Koffka [1915: 57].

⁷⁷Cf. Köhler [1920: 43].

⁷⁸In this sense, Ash [1995: 198] writes that "Max Wertheimer had a profound metaphysical vision that formed his research at every juncture. That vision generated the epistemology that was the core of Gestalt theory. He showed concretely what that vision revealed first in his essay on number concepts, then experimentally in his demonstration of the *phi* phenomenon."

the “phi phenomenon was simply a process, a transition (‘an across in itself’) that cannot be composed from the usual optical contents of single object percepts at two locations. In other words, perceived motion was not just added subjectively after the sensory registration of two spatiotemporal events (or snapshots), but something special with its own phenomenological characteristics and ontological status.” Observers of this kind of movement could no longer even distinguish it from real movement.⁷⁹ For more familiar examples in which we perceive real movement out of static images we can think of a series of juxtaposed frames that at a certain rate (usually measured in *fps*: frames per second) lets us perceive ‘moving pictures’ like in films or video games. In this kind of apparent motion, the ontological primacy of the whole is manifested not only by its irreducibility to its stimulus parts, but also by the influence it exerts on its parts, by the ‘whole-determinations of parts’: The parts are determined by and therefore depend on the whole, because in the context of their mutual constellation and succession, they are only and can only be a stimulus part of the apparent motion.⁸⁰

When Ehrenfels thus remarks that according to the Berlin school, the Gestalt quality is necessarily given with its fundament, with the biconditional implication that if and only if there is a Gestalt quality, then there is a fundament, then he is certainly right. However, two other aspects of his characterization of the Berlin school are less applicable: Firstly, with the indistinguishability of stimulus and percept in the case of the phi phenomenon, it is no longer justified to speak of a ‘fundament’; and secondly, because the perceived whole is now taken as irreducible to its stimulus and Gestalt parts, we can no longer speak of a ‘Gestalt quality’ that is addable and removable, but it is the perceived whole itself to which the term ‘Gestalt’ now applies. Let us call the first aspect the ‘identification of stimulus and percept’ and the second aspect the ‘wholification of Gestalts’.

The identification of the stimulus and the perceptual realm that is typical for the Berlin school of Gestalt theory⁸¹ reduces what Smith [1994: 255] calls the “two-storey ontology” of Ehrenfels and the Graz school into a ‘one-storey ontology’.⁸² Already Wertheimer’s experiments on apparent motion had shown that the distinction between stimuli and percept can no longer

⁷⁹Cf. Köhler [1967: 19].

⁸⁰“Mit seinen Experimenten sucht Wertheimer aber darüber hinaus zu beweisen, daß solche Phänomene nicht sekundär ergänzte Elemente sind, sondern primär gegebene Zusammenhänge, nicht Täuschungsphänomene, sondern spezifisches und vollgültiges seelisches Erleben. ‘Reize’ bestehen, psychologisch gesehen, gar nicht als solche, sie erhalten ihren Sinn und ihre Funktion erst vom Ganzen her [...]” [Fitzek et al. 1996: 32] Cf. for a clear description of the phi phenomenon and its consequences also Scheerer [1931: 20–5].

⁸¹However, some of the members of later generations of the Berlin school make a strict separation of the stimulus and the perceptual domain, for example Metzger [1974: 58]: “Percepts are never structurally identical with the varying configurations on the receptor level. Percepts are units or wholes coherent in themselves and segregated from each other; stimuli are not. Percepts are tri-dimensional and move in a tri-dimensional space; underlying stimuli are distributed over two-dimensional surfaces of the body, such as retinae or the skin of the fingertips. Percepts have (approximately) constant attributes such as size, shape, surface color, and so on, just as their physical counterparts do, while the underlying stimulus configurations vary continuously. For these reasons percepts are in decisive characteristics more like objects than like the stimuli intercalated between objects and percepts.”

⁸²Epstein et al. [1994: 172] formulate this identification of the two realms in stronger terms: “It is well known that the Gestalt theorists rejected the sensation-perception dichotomy. They could find nothing in ordinary perceptual experience that satisfied the description of sensation nor could they find any evidence in phenomenal experience of a transformation from sensational to perceptual representations. They argued that sensations were observational artefacts, creatures of the favoured methodology of the day, analytic introspection, and that the belief in representational transformation was parasitic on the mistaken belief in the reality of sensations [...]”

be maintained if a stimulus like pure motion is directly perceivable as stimulus without this stimulus being reducible to other given stimuli. What we perceive in the case of apparent motion is, in fact, “rather, complex Gestalten, only some of whose parts bear a certain analogy to the putative discrete and independent data of sense which had formed the basis of earlier theories.” [Smith 1988a: 38] Subsequent to Wertheimer’s research findings in this regard, three years later, in 1915, K. Koffka – himself a member of the first generation of the Berlin school – argues more explicitly against the two-level axiom of the Graz school, in particular against Benussi’s theorem that Gestalts are *produced* via a psychical or intellectual activity by the perceiving subject, i.e. via “prejudgmental processing [*Bearbeitung*] of sensory material” [Ash 1985: 305], *after* their founding stimulus parts have been received by our senses.⁸³ As in Ehrenfels, in Benussi the founding parts are likewise not only the condition for the perceived whole. Their constitution of the perceived whole also leaves them, in their role as founding parts, unchanged and thus constant, although they might undergo minor changes when they are brought into relation by the mental act of production.⁸⁴

This is the case, for example, in the Müller-Lyer illusion with which Benussi was mainly concerned.⁸⁵ Although, in this illusion, two equally long lines are and constantly remain identical as stimulus parts, it is via the respective constellation of these lines with other given stimulus parts that we produce two different Gestalts, one in which the line appears as shorter than in the other. Our perception of these lines is thus ambiguous, i.e. more than one possible perception of a constant, in principle unambiguous stimulus is possible. According to this ‘constancy hypothesis’, which was generally argued against by all Gestalt theorists in the Berlin tradition, what is given in the stimulus domain remains constant under all conditions and determines the perceptual domain such that there is an unchanging one-to-one part determination from the external stimulus via a local excitation of a sensory organ to how something is perceived in the phenomenal realm. It thus says “that the sensation is a direct and definite function of the stimulus. Given a certain stimulus and a normal sense-organ, we know what sensation the subject must have [...]” [Koffka 1922: 534]. If we perceive the lines of the Müller-Lyer illusion as unequal, for example, although they are objectively equal as stimuli and therefore *should* be perceived as equal, then our perception as a result of the Gestalt production is simply *inadequate*.⁸⁶

Koffka, however, argues against Benussi that there is no independent criterion in our direct perception of an ambiguous phenomenon such as the Müller-Lyer illusion for comparing and then deciding about the adequacy of the percept, since our percepts are irreducible to the stimulus domain, as Wertheimer had shown in the case of apparent motion.⁸⁷ In other words, “if

⁸³Cf. Koffka [1915: 16].

⁸⁴Cf. id. [18].

⁸⁵Cf. e.g. Benussi [1904; 2002].

⁸⁶Hence the title of Benussi’s important 1914 [2002] article ‘Gesetze der inadäquaten Gestaltauffassung’.

⁸⁷“Was ist, ohne alle Theorie, bei der Feststellung der Gestaltmehrdeutigkeit als Tatsache anzusehen? Offenbar dies, daß bei *gleichem* Reiz verschiedene Erlebnisse möglich sind (ohne daß diese Verschiedenheit etwa auf veränderte Aufnahmebedingungen in den Sinnesorganen zurückzuführen wäre.). B. [Benussi, M.S.] drückt diesen Tatbestand aber, wie wir gesehen haben, anders aus: er spricht nicht nur von *konstantem* Reiz-, sondern auch von *konstantem* Empfindungsmaterial. Welche Beobachtungstatsachen kann er dafür anführen? Keine einzige direkte, denn wenn wir aus der direkten Beobachtung der Gestaltvorstellungen die Anwesenheit der konstanten Sinnesvorstellungen entnehmen könnten, dann gäbe es in der Selbstbeobachtung ein Kriterium dafür, ob wir es mit einer Gestalt- oder einer Sinnesvorstellung zu tun haben, das es aber

constant sensory contents cannot be directly observed, yet are objectively necessary, they must be unnoticed.” [Ash 1985: 311] If our direct, descriptive perception and not the subsequent analysis of the stimulus parts is taken as the basis for empirical research into perceptual phenomena, then what is hypothesized as unnoticed cannot count as an appropriate constituent, either for explanatory or for descriptive purposes. Instead, as Wagemans [2015: 6] formulates it, “the fundamental break with the Graz school was a radical revision of the meaning of the word ‘stimulus’. In this new conception, this word no longer referred to a pattern of excitations on a sense organ, as it had throughout the 19th century, but to real objects outside of and in functional relation to a perceiving and acting organism.”⁸⁸ Gestalts are thus directly evident ‘in the noticing of’⁸⁹ stimulus-percepts, which are already internally organized before they are perceived, without the necessity of a mental production at a later stage. In so doing, the Berlin school antagonized what Scheerer [1931: 18] characterizes in this context as a “‘disensoulment’ of sensuousness” (*‘Entseelung’ der Sinnlichkeit*). Furthermore, because our whole organism, including our brains, are held to correspond with – or: are taken to be *isomorphic* with – the inherent Gestalt structure of the stimulus percept, a pure phenomenological description of the percept stimulus is sufficient both for determining the adequacy of what is perceived⁹⁰ and for doing justice to our whole physiological disposition for perceiving Gestalts immediately.⁹¹

In his brief characterization of the Berlin school of Gestalt theory quoted above, Ehrenfels writes that according to this conception, “the Gestalt quality is necessarily given along with the fundament”. Whereas he was right concerning the necessity, which then leads halfway to the one-sided dependence of the parts on their whole, it is not only incorrect to distinguish ‘fundament’ and consequently founded parts/whole in this context, but also to assume that Wertheimer, Köhler, Koffka and other (later) members of the Berlin school had maintained the notion of a ‘Gestalt quality’. In their view, instead, the entity that differs from the sum of its parts is not an additional part that makes for a perceptual whole, but is the perceptual-stimulus whole itself that is, or at least can be, a Gestalt (if it is neither a sum nor a pure chaos of parts). As Smith [1988a: 13] puts it, “[a]ccording to the later Berlin conception, in contrast, a collection of data (or any other psychological formation) does not *have* a Gestalt: it *is* a Gestalt, a whole whose parts are themselves determined as being such that they can exist only as parts of a whole of this given kind.” Accordingly, a Gestalt *is not* a quality, but *can have* a quality as a “holistic/configural property” [Kimchi 2015: 141], that neither of its parts has in isolation and that even determines the mode of existence of the parts up to the possibility of their very existence as parts itself.

In so doing, the Gestalt paradigm of the Berlin school distinguishes between parts with part qualities and a whole (which is in many perceptual cases a Gestalt) with whole qualities, whereby both parts and whole stand in a functional relation to each other.⁹² A melody, taken

nach B.s Ansicht [...] nicht gibt.” [Koffka 1915: 26]

⁸⁸Cf. for a similar formulation Ash [1985: 312].

⁸⁹Cf. Ehrenfels’ characterization in the quote above.

⁹⁰“Die reine Deskription der Erlebnisse kann daher nicht mehr am Empfindungsbegriff (in seiner deskriptiven Form) orientiert werden, sie wird von der Gestalt und deren Eigenschaften auszugehen haben.” [Koffka 1915: 57]. Cf. also Koffka [1925: 539] and the application of this stance to the field of values in Köhler [1939].

⁹¹“In the Gestalt approach, our perceptions are directly determined by effects of the stimulus *configuration* upon our self-organizing nervous systems, not by the aggregate of their *local* stimulus properties.” [Hochberg 1998: 256]

⁹²“Im Vordergrund steht der *Zusammenhangsnachweis* für die Teile und Momente des Ganzen, die *funktionale*

as a Gestalt, for example, can have the Gestalt quality of being melancholic, which, in turn, makes every tone sound melancholic, although no tone in isolation would have this quality. It is their being related within a Gestalt that gives the parts essential properties they would not possess without being organized in a certain way.⁹³ Or, to give another example, in the case of ‘amodal completion’ an observer clearly ‘sees’ a part that is overlapped as being such and such, whereby the existence of the part is determined by the internal organization of the whole.⁹⁴ In Figure 6-1 below, provided by Metzger, we can see a Gestalt in *a* consisting of a rectangle that apparently covers two crossed lines that continue under the rectangle like in *b*. A pure description of the perceived phenomenon thus automatically lets us complete the stimulus even when it is not visible: We do not just add the two supposedly overlapped lines to the visible ones and thus extend the latter, but we see a partly overlapped cross in the whole from the outset. For this reason, “the impression is self-evident and compelling. So much so that you would feel outright deceived if, on removal of the covering strip, it turned out that the lines were configured something like in [*c*] or did not intersect at all [*d*].” [id.] In general we can say with Wagemans [2015: 8] that in moving away from the conception of a Gestalt quality as an additional (and removable) part, the Berlin school “went further and considered a Gestalt as a whole in itself, not founded on any more elementary objects. Instead of perception being produced from sensations, a percept organizes itself by mutual interactions, a percept arises non-mechanically by an autonomous process in the brain.” To illustrate how this ontological primacy of the whole, understood as Gestalt, becomes evident in empirical perception according to this paradigm of Gestalt theory, we now turn to the field of perceptual grouping.

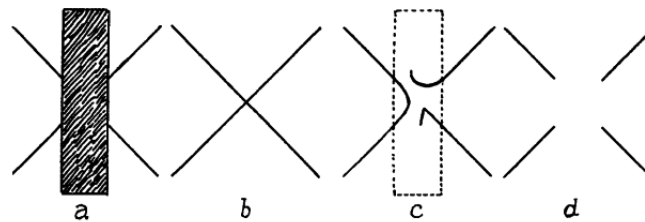


Figure 6-1: *Amodal Completion*⁹⁵

6.3.2 Primacy of the Whole in Perceptual Grouping

One of the main instances of empirical evidence for the ontological primacy of the whole in relation to its parts within the ontological region of empirical perception comprises the organization of single parts into more comprehensive groups. This research area of perceptual grouping, which is, alongside figure-ground perception, one of the two components of perceptual organization,⁹⁶ has probably been – up to the present day – the most extensively studied, elaborated and commonly known field of Gestalt theory. However, the basic idea of perceptual

Abhängigkeit der Ganz- und Teileigenschaften voneinander. [...] Ein *Existenz*problem besteht für natürliche Teile und deren Eigenschaften. Es ordnet sich dem funktionalen Problem unter: Je nach Zusammenhangsverhältnissen kann ein Teil relativ ausgegliedert sein oder im Verband mit der Nachbarschaft ‘aufgehen’.” [Rausch 1966: 891]

⁹³Cf. Koffka 1925: 532.

⁹⁴On amodal completion, cf. Michotte et al. [1966].

⁹⁵Reproduced from Metzger [2006: 134]. The reproduction is kindly permitted by MIT Press.

⁹⁶Cf. Wagemans et al. [2012a: 9].

grouping is relatively simple. In his influential 1923 paper *Investigations on Gestalt Principles II*,⁹⁷ Wertheimer [2012: 128] formulates it as follows: “In general, if a number of stimuli are presented to a person simultaneously, generally that person does not experience an equally large number of individual *givens*, one and another and a third and so on. Rather, the person experiences *givens* of a larger scope, with a particular segregation, a certain grouping, a certain division.” These ‘givens of a larger scope’ then are, as perceptual wholes, the Gestalt. This means that in most cases, in particular in cases of visual perception, what is perceived first is the Gestalt, or in other words, as Navon [1977: 353] puts it, the idea is that “global structuring of a visual scene precedes analysis of local features [...]”.

Moreover, the simple and directly observable fact that somehow our percepts are internally structured such that the single parts form groups that are perceived prior to the parts themselves lets Wertheimer conclude that there must be certain underlying principles according to which organized groups or patterns of parts, i.e. Gestalts, are formed.⁹⁸ The postulation of the existence of such ‘Gestalt principles’ or ‘factors of grouping’ not only serves the purpose of explaining or at least demonstrating the functional dependence of parts on the kind of supra-summative whole in which they are perceived, i.e. “to define the rules of ‘what is or stays with what’ [...]” [Pinna et al. 2010: 293]. It also firstly prevents there being a necessary and actual Gestalt correlate for *any* possible assembly of parts⁹⁹ by ensuring that, due to the underlying principles, only *some* Gestalts naturally occur but not others.¹⁰⁰ Secondly, the independent existence of Gestalt principles for perceptual grouping prevents the perception of Gestalts as grouped parts (only) being ascribable to our subjective attention and previous experience.¹⁰¹ To borrow again from the terminological fundus of Kant: Instead of being *synthetic a posteriori*, Gestalt principles are rather *synthetic a priori*, whereby the ‘a priori’ in this case refers to physiological processes in the brain that correspond with the perceived whole’s internal structuredness¹⁰² such that a visual Gestalt, as Guberman [2015: 30] recently defines it, “is the shortest description of the way in which the visual stimulus can be recreated.”

Although Wertheimer was not the first psychologist who propounded principles for the grouping of parts into more coherent perceptual wholes¹⁰³, he was the first to accentuate the determi-

⁹⁷‘Untersuchungen zur Lehre von der Gestalt II’, cf. Wertheimer [1923].

⁹⁸“Are there principles that govern the nature of the resulting perceptual grouping and division? What are they? If stimuli *a b c d e...* are active together in a certain configuration, what are the principles whereby the typical grouping is perceived as *a b c / d e...* and not, say, *a b / c d e...*?” [Wertheimer 2012: 128].

⁹⁹Cf. the ‘bad infinity’ argument in 5.2.4.

¹⁰⁰In this regard, Wertheimer states that the question concerning Gestalt principles “applies whether the first grouping [*a b c / d e*] is what regularly results and in fact a certain other cannot be achieved, or the first grouping is merely the normally expected, spontaneous, ‘natural’ one while the second [*a b / c d e*] is also quite possible, but only artificially or under certain circumstances, and perhaps more unstable.” [id.]

¹⁰¹Cf. id. [129–30] and Metzger [2006: 181], who writes accordingly that the “organization of the visual field occurs within us essentially without our involvement, and without our explicit awareness of any of its laws.”

¹⁰²As Wagemans et al. [2012a: 24] show in their overview of recent research in Gestalt theory, this view is still held today: “In general, Gestalt psychology has tended to emphasize the degree to which the Gestalt laws are innate or intrinsic to the brain rather than learned from past experience. Research suggests that infants are capable of grouping visual elements into unitary structures in accord with a variety of both classic and modern organizational principles.” For the analogy between Gestalt principles and Kant’s a priori conditions for experience, cf. Spillmann [2012: 116].

¹⁰³Cf. Vezzani et al. [2012], who accentuates the contribution of G.E. Müller, F. Schumann and E. Rubin to Wertheimer’s development of Gestalt principles.

native and general character of these principles for figure formation.¹⁰⁴ To do so, Wertheimer employs the most basic manner for demonstrating, verifying and varying them, namely by displaying simple dots and lines.¹⁰⁵ He argues that in our visual impression of a collection of identical black dots, the dots that stand closer to each other than to other dots are directly perceived as forming a group. For example in the row ●● ●● ●●, we perceive the pattern ①②/③④/⑤⑥ instead of e.g. ①/②③/④⑤/⑥ or the mere sum of six mutually independent dots (①/②/③/④/⑤/⑥) due to the unequal distance between the dots. The same is the case in a 2-dimensional arrangement, such as in ●● ●● ●●, in which we usually perceive three diagonal groups instead of two horizontal ones. Furthermore, in stroboscopic alterations of stimuli for producing apparent motion, for example when in ①② ①② ①② the dots ① and ② blink alternately, we perceive movement between the dots that stand closer to each other, i.e. between ①↔②, not ②↔①.¹⁰⁶ This is then the first Gestalt principle: *proximity*.¹⁰⁷ After providing other examples for *proximity* with a higher number of arranged dots, Wertheimer concludes that the higher the number of stimulus dots is, the fewer possibilities there are for grouping them in perception.¹⁰⁸ This implies that in a real life environment in which there is usually a manifold of stimuli, we tend to directly perceive stable, i.e. unambiguous patterns, among others due to *proximity*.

Other Gestalt principles also play an essential role for grouping, such as the principle of *similarity*, according to which we perceive what is similar as belonging together, for example in ○○●●○○●●, in which the distance is equal, we see one group of full and one of empty circles. Such a pattern is acoustically perceptible “with strong and weak tapping in alternation” [id.: 136] as well. *Similarity* also plays a role for apparent movement: When there is no difference in *proximity*, then an alternating blinking of 1 and 2 in ①②①②①②①② results in movement between the similar and not the dissimilar elements.¹⁰⁹ Of course, *proximity* and *similarity* can also be combined, either to complement (as in ○○ ●● ○○ ●●) or to compete with each other (○● ●○ ○● ●○).¹¹⁰ In the course of his article, Wertheimer demonstrates more Gestalt principles, such as *common fate*, “which describes the perceptual tendency according to which stimulus objects that change together in location or that move together group into Gestalten” [Sarris 2012: 185], *good continuation* or *continuity*, according to which “oriented units or groups tend to be integrated into perceptual wholes if they are aligned with each other” [Todorovic 2008: 5345]. An example would be the four lines *A*, *B*, *C*, *D* that we usually see as the two lines \overline{AD} and \overline{BC} in Figure 6-2:

¹⁰⁴Cf. Wagemans [2015: 8–9].

¹⁰⁵On the advantages of this methodological choice cf. Sarris [2012: 186–7].

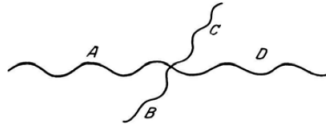
¹⁰⁶Cf. Wertheimer [2012: 142].

¹⁰⁷Cf. id.: 130 f.

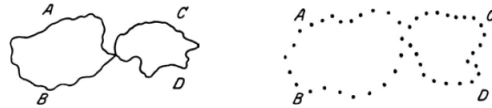
¹⁰⁸“Although it is mathematically and theoretically the case that the more dots there are, the more possibilities of combination are conceivable, the facts do not support this at all. Actually, larger numbers of dots in the stimulus tend to promote fewer perceptual groupings; indeed, such configurations are often unequivocal under normal circumstances. With configurations of fewer dots, there are considerably more alternative groupings possible.” [id.: 134]

¹⁰⁹Cf. id. [143].

¹¹⁰Cf. id. [139].

Figure 6-2: *Good Continuation or Continuity*¹¹¹

Another Gestalt principle is *closure*, which means that “[g]iven A , B , C , and D , if $A B / C D$ generates two closed progressions (running back into themselves), but $A C / B C$ generates two unclosed (open) ones, then $A B / C D$ is favored.” Two examples given by Wertheimer [id.: 155] would be the four line segments A , B , C , D , which form the two closed areas AB and CD , even if other Gestalts are possible, for example the two continuous lines \overline{AD} and \overline{BC} in Figure 6-3:

Figure 6-3: *Closure*¹¹²

Wertheimer provides a plenitude of simple examples and combinations of these Gestalt principles, which there is, however, no need for the present project to present in detail. There is also no need to consider here further research on these¹¹³ or to elaborate on the many additional Gestalt principles that have been suggested in the literature on perceptual grouping to date, for instance *symmetry*, *parallelism*, *convexity*¹¹⁴, *common region*, *element connectedness*¹¹⁵, *synchrony*, *edge region grouping*¹¹⁶, and *requiredness*¹¹⁷. In fact, since “Gestalt psychology led to a proliferation of hundreds of ‘laws’ (or, more accurately, ‘principles’), of perceptual organization [...] concerns arose that there were more explanations being proposed than the number of phenomena they could explain.” [Wagemans et al. 2012b: 10].¹¹⁸ To this it can be added that “[m]any Gestalt proposals for grouping factors and possible mechanisms are suggestive and promising, but often the Gestalt laws of perceptual organization are expressed casually or subjectively rather than being made explicit.” [Pomerantz 2003: 472].

More importantly for the present development of the idea that parts and whole could also be regarded as dependent on each other, such that there is an active oscillation and enrichment between the two sides instead of a relation of supervenience, is to stress that according to the basic idea behind perceptual grouping and its principles, this is not the case. To me it seems that the main ontological statement that is at the bottom of perceptual grouping is to demonstrate in which ways, i.e. according to which Gestalt principles, a perceived whole supervenes on its parts, whether classified as stimulus or perceptual parts (a distinction that is often blurry and therefore more functional than substantive). Of course, the dots and lines with which the principles are demonstrated have to be there first in order to be arranged and

¹¹¹Reproduced from Wertheimer [1923: 322]. Reproduction kindly permitted by Springer Nature.

¹¹²Reproduced from Wertheimer [1923: 326]. Reproduction kindly permitted by Springer Nature.

¹¹³Cf., as one example for many others, Kubovy et al.’s [1995] quantification of the *proximity* principle for the perception of unstable dot lattices.

¹¹⁴Cf. on these three and other principles the overview provided in Wagemans et al. [2012a: 20-1].

¹¹⁵Cf. on these two and other principles the overview provided in Todorovic [2008: 5345].

¹¹⁶Cf. on these two and other principles the overview provided in Spillmann [2012: 195].

¹¹⁷Cf. Köhler [1939].

¹¹⁸Cf. on this possible criticism also Guberman [2015: 30].

to enter into relations. The problem is that unless one single dot or line is perceived (and even then they probably stand in a perceptual whole, most notably in a figure-ground relation¹¹⁹), there is no real ‘prior to’ for the part’s existence before it becomes a Gestalt part.¹²⁰ According to Koffka, pure isolation, as the condition for forming an ‘and-sum’, is only a limiting case, as is pure chaos, i.e. an amorphous fusion of parts without a unified whole.¹²¹ Thus, from an ontological point of view, perceptual grouping is the natural and empirical manifestation of whole primacy and part dependence on the whole. The ‘meta-principle’ of *Prägnanz*, which will be delineated next, only reinforces this point.

6.3.3 The Meta-Principle of *Prägnanz*

Partly due to the high number and the danger of proliferating Gestalt principles¹²² and partly due to their similitude in the tendency of forming Gestalts that are more simple than other possible organizations of the given stimuli, Gestalt theorists have suggested the idea of *Prägnanz*,¹²³ which therefore can be classified as a ‘meta-principle’. Todorovich [2008: 5345] proposes the following terms for the translation of *Prägnanz* into English: “salience, incisiveness, conciseness, impressiveness, or orderliness”. This meta-principle is generally held to include the more special Gestalt principles such as *proximity* and *similarity*, and it states, “in its broadest form, that the perceptual field and objects within it take on the simplest and most impressive structure permitted by the given conditions.” [Ash 1995: 224], or in other words, “psychological organization will always be as ‘good’ as the prevailing conditions allow.” [Koffka 1935: 110]. In accordance with the cognitive linguistic framework of embodiment depicted above, it is furthermore possible to explain the principle of perceptual *Prägnanz* with the more or less corresponding ways the sensorimotor domain of our bodies interact with the environment. As Goldstein [1995: 292] puts it, “the tendency toward the good Gestalt finds its explanation as an organismic phenomenon. The explanation lies in the tendency toward preferred behavior, which is the essential prerequisite for the existence of a definite organism. It is a special expression of the general tendency to realize optimal performances with a minimum expenditure of energy as measured in terms of the whole. The operation of this tendency includes the so-called ‘prägnanz,’ the closure phenomenon, and many other characteristics of Gestalt. In fact, they are only intelligible from this tendency.”

Apart from the examples already given above for the more special Gestalt principles, a good example for our perceptual preference for salient and stable figures lies in the fact that in perceiving geometrical shapes or in conceptualizing time, often the most distinguished form stands out, even when it is not given as such. When an angle that is slightly more narrow or wider than 90° is given, we tend to perceive this angle as having or at least tending towards 90°, which is the most salient angle in this gradual range. Compared to an angle of 90°, an angle of

¹¹⁹Cf. subsection 7.4.1.

¹²⁰“Nicht also sind ‘die Stücke’ zunächst als das ‘prius’ anzusetzen, als Fundment in Und-Verbindung und unter prinzipiell sachfremden Bedingungen ihres Auftretens, sie stehen vielfach als Teile unter sachlichen Bedingtheiten von ihrem Ganzen her, sind von ihnen her ‘als Teile’ zu verstehen.” [Wertheimer 1922: 53]

¹²¹“Undverbundenheit, Isoliertheit ist keineswegs die natürliche, geringere Leistung, sie ist nicht an den Anfang zu setzen, als Ausgangspunkt anzusehen.” [Koffka 1925: 547]. Cf. also Wertheimer [1922: 52].

¹²²Cf. Wagemans et al. [2012a: 39].

¹²³Wertheimer was the first to suggest this meta-principle in 1914 at the 6th *Kongress für experimentelle Psychologie* in Göttingen. He, as well as other members of the Berlin school, then developed it in later research.

say $85^\circ \pm 4^\circ$ or $95^\circ \pm 4^\circ$ seems to be less good, less stable, less definite and poorer, such that in most cases we do not even immediately perceive the imperfect angle, let alone its precise degree.¹²⁴ The same is the case for our conceptualization of time. For time specification, the full hour is the most *prägnant* reference point, followed by the half-hour and the quarter indications.¹²⁵ Examples like these fall under the category of ‘levels of *Prägnanz*’ (*Prägnanzstufen*), in which some entities exhibit a higher level of *Prägnanz* and therefore serve as reference points for other, related entities.

The tendency of our perceptual system to prioritize the more *prägnant* entities and to consciously or unconsciously realize in perception an entity’s potential salience corresponds to this hierarchical relationship between different entities within the same frame of reference.¹²⁶ In doing so, we do not perceive a *wrong*, but a *better* entity, a more integrated and distinguished one, an entity that seems “to define a basic form or skeleton, a more perfect original image, from which the real object only seems to be diverted through certain distortions, deletions or additions.” [Metzger 2006: 138] Ultimately, the perception of a less perfect image *as* a more perfect image or the direct perception of entities that possess a high level of *Prägnanz* is supposed to express the goodness and simplicity of an object itself (‘objectual *Prägnanz*’) and is thus also categorizable as an aesthetic category to which positive or negative value judgments as well as aesthetic experiences apply.¹²⁷ In this sense, a work of art can be judged according to the measure of its unity, simplicity and orderliness that are perceptible at one single glance, whereby less fitting parts would deform and unsettle the whole composition’s balance and harmony.¹²⁸ Thus, as Luccio [1999: 128] formulates it, “Gestalt theorists use the term *Prägnanz* to mean *both* a tendency of the perceptual process to assume the most regular and economic course, given the constraints (*Randbedingungen*) present in each specific case, *and* a tendency towards the maximum *Ausgezeichnetheit* in the concrete phenomenal result of the process itself.”

In his 1966 paper ‘Das Eigenschaftsproblem in der Gestalttheorie der Wahrnehmung’, which is one of the most profound theoretical treatises on *Prägnanz*, E. Rausch distinguishes between seven aspects the three aforementioned categories of objectual *Prägnanz* feature together. The motivation for this sevenfold distinction is to do justice to the high complexity of the *Prägnanz* concept and to clarify the different applications of it in the literature.¹²⁹ He argues that if we understand *Prägnanz* as a property of an empirically perceptible object, then we can subdivide this property into the following aspects, which are either applicable (p_n) or not (q_n) on a gradual scale.¹³⁰

¹²⁴Cf. Wertheimer [1923: 146] and Rausch [1966: 910f].

¹²⁵Hüppe [1984: 13] uses this example in her study on *Prägnanz*: “Zur Veranschaulichung denke man an die üblichen Zeitbestimmungen. Es ist die Rede von ‘fünf Minuten vor zwölf’ oder ‘drei Minuten nach halb sechs’. Die volle und die halbe Stunde als *Prägnanzstufen* fungieren als Bezugspositionen. Zeitangaben wie ‘fünf Minuten vor neun Uhr fünfundzwanzig’ oder ‘drei Minuten nach vier Uhr elf’ kommen nicht vor.”

¹²⁶“Unter der *Prägnanztendenz* ist ein *autochthones Streben der Wahrnehmung nach Verwirklichung ‘ausgezeichneter’ Strukturen zu verstehen. Ziel ist die Realisierung der in der jeweiligen Gestalt angelegten *Prägnanzform*. In Abhängigkeit von den Reizverhältnissen nähert sich das Phänomen dieser *Prägnanzform* mehr oder weniger weit an.” [id.]*

¹²⁷Cf. [id.: 14].

¹²⁸Cf. on Gestalt aesthetics in the context of the *Prägnanz* meta-principle, including a critique of it, Smith [1988a: 66–69].

¹²⁹Cf. Rausch [1966: 911].

¹³⁰Cf. on the discussion of Rausch’s seven aspects of *Prägnanz* Hüppe [1984: 25–29], Smith [1988a: 62–65], whose translation I will adopt, and Luccio [1999: 125].

Firstly, there is the aspect of *lawfulness* [*Gesetzmäßigkeit*; p₁], which refers to the distinctiveness and uniformity of a Gestalt, to its intuitive clarity, singularity and internal order that can but does not have to lead to pure homogeneity. The lawfulness ranges over every part of the Gestalt and constitutes its firmness and coherence with the other parts. On the opposite side of this aspect lies the *arbitrariness* [*Zufälligkeit*; q₁], which makes a Gestalt appear as being randomly put together, either by accident or on purpose, or even as lacking any uniformity such that it blurs with or disappears entirely in its environment.¹³¹ Rausch highlights that the *Prägnanz* aspect of more or less *lawfulness* is the most fundamental, because all of the other aspects rely on it in one way or another.¹³² This is particularly the case for the next four aspects, because together with the first, they form a group that applies to Gestalts in a purely figural or structural sense.

The lawfulness of a figurally given Gestalt is thus a condition for the positive *originality* [*Eigenständigkeit*, also translatable as ‘discreteness’; p₂] as the second *Prägnanz* aspect, the negation of which would be *derivativeness* [*Abgeleitetheit*; q₂]. While a right angle, for example, is not derived from an obtuse or acute angle, in our perception the latter ones are derived from the former which is the more original one.¹³³ Thirdly, a Gestalt also has to be lawful in order to appear as integral or intact, which makes *integrity* [*Integrität*; p₃] the third positive *Prägnanz* aspect. On the other hand, the “lack of integrity can manifest itself in different ways: something can be absent, missing, there might be a hole, there might be *too little* of something there. There can also be too much, a superfluity, a growth, an alien body. Or it can be a matter of the object’s being something other than what it should properly be.” [Smith 1988a: 63–4] The opposite of *integrity* would therefore occur when an object is somehow *disturbed* or *damaged* [*Gestörtsein*, *Beschädigtsein*; q₃]. Fourthly, a Gestalt can be lawful either in a simple or in a complicated way, which is why *simplicity* [*Einfachheit*; p₄] and *complicatedness* [*Kompliziertheit*; q₄] are classifiable as a fourth gradual *Prägnanz* aspect.¹³⁴ In this regard, one should not confuse the *complicatedness* and the *complexity* of a Gestalt: Whereas being complicated is a property that makes a Gestalt intuitively and intellectually hard to grasp, the complexity of a Gestalt accounts for the etymological sense of *prägnant* as pregnant, fruitful or full. It is thus a positive characteristic that indicates the fifth aspect: the *richness* or *diversity* [*Reichhaltigkeit*; p₅] that is opposed to a Gestalt’s *scantiness* or *tenuity* [*Kargheit*, *Tenuität*; q₅]¹³⁵ and that is etymologically derivable from *praegnans* and not – like the former aspects – from *premere*, which, according to Arnheim [1975: 281], signifies “taking a firm hold, distinct, clear, precise”.

In addition to these five aspects that belong to the structural or formal features of a Gestalt, there is another group consisting of aspects p₆–q₆ and p₇–q₇ and entailing features of content or material. These features have “to do with the specific natures of given structures, with the environments in which they exist, with the types of mental set, traditions, habits, with

¹³¹Cf. id. [912–914].

¹³²Cf. id. [947].

¹³³Cf. id. [914]. This example applies to the category of levels of *Prägnanz* [*Prägnanzstufen*] sketched in the previous paragraph.

¹³⁴Cf. id. [925].

¹³⁵Smith [1988a: 65] characterizes this aspect as “a matter of a structure’s having a richness of elements, its being fruitful, heavy, significant, weighty, full of something. It is a matter of a wide spread of parts, of internal contours and boundaries, as opposed to that which is meagre, sparse, tenuous.”

which they are associated.” [Smith 1988a: 65] While the sixth aspect signifies the degree of a Gestalt’s *expressivity* [*Ausdrucksfülle*, p6] or the negation of it [*Ausdrucksleere*, q6] through which it reveals its more or less pure essence in its physiognomy, the last aspect refers to the empirical *meaningfulness* [*Bedeutungsfülle*; p7] or *meaninglessness* [*Bedeutungsleere*; q7], which means the knowledge and previous experience a perceiver has in order to contextualize a Gestalt. A known word, for example, of which we usually know the meaning and sense its expressivity, can under certain conditions, e.g. after long repetition, lose both *meaningfulness* and *expressivity* and become empty, while all of the structural aspects of the first group still apply. Rausch argues that this example illustrates the separability of the five formal and the two material aspects.¹³⁶

The elaborateness of Rausch’s differentiation of *Prägnanz*, of which the previous paragraph could only scratch the surface, shows how fruitful and multilayered an approach to this meta-principle can be. It is therefore hardly surprising that since the earliest suggestions of *Prägnanz* by the first generation of the Berlin school, visual experiments on *Prägnanz* in particular remain an active field of Gestalt research today. In some cases, however, the postulation of a tendency towards the most simple pattern in our perception has been discussed in a critical light, for example by refusing the category of objectual *Prägnanz* as an object’s distinguished singularity, while at the same time confirming that our perceptual process indeed involves a tendency towards the stabilization of the objects within the perceptual field via their self-organization by principles of grouping.¹³⁷ Another, more general criticism concerns the definitional vagueness of *Prägnanz* in the sense of ‘goodness’. For scientific purposes, ‘goodness’ is neither exact nor objective, but presupposes a subjective value judgment that can be motivated and therefore defined in the most contingent ways.¹³⁸ Moreover, Arnheim refers to a further problem with *Prägnanz*, which he in fact specifies only for the context of artworks, but that I think applies to objects in general.¹³⁹ He argues that it is a common misunderstanding to interpret *Prägnanz* only along the lines of simplicity and geometrical regularity. This misunderstanding is comprehensible, given the fact that most textbook examples of *Prägnanz* make use of simple dots and lines. He points out, however, that in the case of artworks, simplicity does not mean a complete fusion of parts into one simple and stable whole, but is rather the result of a creative tension and interplay between the stimulus parts, in particular their role of constraining the given material, and the perceptual tendency to simplify the constraining stimuli into a coherent whole. The result, then, “is in the artwork a structure in which the maximum richness of the invention of forms connects with the maximum simplicity of compositional organization. Here we have in the language of aesthetics the formula of unity in multiplicity.”¹⁴⁰ [Arnheim 1975: 280] Such an artwork, which stands in a constant dynamic tension between the material parts and the perceptual tendency towards wholeness, does not need to contrast with its environment

¹³⁶Cf. Rausch [1966: 939].

¹³⁷Cf. the theoretical and experimental considerations in Kanizsa et al. [1986] and Luccio [1999; 2003].

¹³⁸Cf. Hüppe [1984: 18–19] for an overview of this objection to the scientific usability of *Prägnanz* and the difficulties for defining it.

¹³⁹Cf. Arnheim [1975: 279–80].

¹⁴⁰My own translation. The original reads: “[...] das Ergebnis ist im Kunstwerk eine Struktur, in der sich der größtmögliche Reichtum an Formerfindung mit der größtmöglichen Einfachheit der kompositionellen Organisation verbindet. In der Sprache der Ästhetik haben wir hier die Formel von der Einheit in der Mannigfaltigkeit.”

as if it does not belong to it and is, in principle, isolatable from it, but should – made possible by the still energetic stimuli – stand in a harmonious relationship with the space surrounding the artistic Gestalt. The more simple and unified the whole is, however, the more it would unnaturally stand out from its environment. This is particularly important for artworks in the public sphere (statues, buildings, urban districts).¹⁴¹ This criticism, or perhaps clarification, of the meta-principle of *Prägnanz* points to a more general issue of Gestalt theory and it will serve to introduce the still remaining option of a two-sided dependency of parts and whole, an option which is crucial for the determination of PWO's ontological nature.

6.4 From One-Sided to Two-Sided Part-Whole Dependency

To recapitulate, there are four options in which parts and whole can relate to each other in terms of dependency: Firstly, there can be no relation of dependency between parts and whole. This implies a horizontal or 'flat' ontology, since there is no hierarchy involved. It is the case for independent parts, i.e. pieces in the Husserlian sense, the wholes of which are 'agglomerations', or 'and-sums' that are producible only by an external influence.¹⁴² We can express this mutual independence of parts and whole symbolically as follows: $\nRightarrow \square$, which says that neither the parts \nRightarrow necessarily and naturally follow from the whole \square , nor vice versa. Then we saw with Ehrenfels that from the parts as fundament, a – yet not *any* – perceptual whole can follow via the addition of a Gestalt quality as a part that had not existed in the set of fundamental parts. By removing the Gestalt quality, the perceptual whole is in turn reducible to its fundamenta. The direction of one-sided dependency is thus "from below upward" [Wertheimer 1938: 15], whereby the stimulus parts at the bottom enjoy ontological primacy: $\begin{smallmatrix} \square \\ \uparrow \\ \vdots \end{smallmatrix}$.

Wertheimer himself, representative for the other members of the Berlin school and its far-reaching influence on psychological research on perception, argues in the most explicit style against this upwards movement by proclaiming the pertinence of a "procedure 'from above'", whereby "the comprehension of whole-properties and whole-conditions *must* precede consideration of the real significance of 'parts'." [id.] Using the example of a melody, Wertheimer argues that what "is given me by the melody does not arise [...] as a *secondary* process from the sum of the pieces as such. Instead, what takes place in each single part already depends upon what the whole is. The flesh and blood of a tone depends from the start upon its role in the melody: A *b* as leading tone to *c* is something radically different from the *b* as tonic. It belongs to the flesh and blood of the things given in experience [*Gegebenheiten*], how, in what role, in what function they are in their whole." [id.: 5] In other words, but again with Wertheimer [1944: 324]: "It cannot matter of what materials the particles of the universe consist; what matters is the kind of whole, the significance of the whole, the meaning of the whole, the nature of the whole." To a large extent, $\begin{smallmatrix} \square \\ \downarrow \\ \vdots \end{smallmatrix}$ is still the dominating paradigm of Gestalt theory and evinces itself, for example, in the relevance attributed to holistic properties ('from global to local'), principles of perceptual grouping and the meta-principle of *Prägnanz*.¹⁴³

¹⁴¹Cf. id. [283].

¹⁴²Cf. 2.1.5 and the beginning of 4.2.

¹⁴³In this context, it is important to distinguish the pair 'from below' and 'from above' from the pair 'bottom-up'

However, in the recent literature on Gestalts one can discover a couple of approaches that suggest where I myself would like to go with the idea – identified already in the dynamic structure of conceptual metonymy¹⁴⁴ – of an active back-and-forth movement between parts and whole, i.e. a two-sided dependency of parts and whole in which they are equally fundamental by providing mutual completion.¹⁴⁵ This oscillating or reversible primacy $\square \rightleftharpoons \square$ implies that there is no strict hierarchy of one-sided dependency, but rather a part-whole interdependency, as is outlined, yet not further elaborated on, by Arnheim [1992: 203]:

“One should be wary, however, of the one-sided formulation that in gestalt structures the whole determines the parts. A one-sided stress on the approach from above was justified in the early days of the campaign against the description of entities from below. Actually, something much more complex takes place. The structure of the whole, certainly of dominant importance, is influenced by the parts, which in turn depend on the whole as to their shapes and interrelations. Neither the whole nor the parts are primary constants, primordial executives of influence. Rather, all components from the whole to the smallest detail exert their modifying effect, while they are being modified [...]. Within the local boundaries, which organize complex gestalten, subordinated structures create their own smaller gestalten, dependent though they remain on their surroundings.”

In the next chapter, I will show that the introduction and discussion of this fourth possibility is especially worthwhile when we ask the question of when, how and why a Gestalt does appear as perceptually meaningful to us. First, however, it is expedient to briefly evaluate the two positions of one-sided dependency in order to show which of their characteristics are integrable and which ones are less useful for the development of PWO, the ontological nature of which involves two-sided part-whole dependency. For each position, I suggest two positive aspects (\oplus) that are beneficial to adopt and two negative aspects (\ominus) from which I want to distance

and ‘top-down’. “The latter notions refer more to ‘sense-driven’ and ‘concept-driven’, respectively, and in this regards Gestalts are more sense-driven or bottom-up, by being based on autonomous tendencies, not depending on previous knowledge, expectations, voluntary sets, observer intentions, etc.” [Wagemans 2015: 8] Correspondingly for the framework of the present project, the chapters on cognitive linguistics and on part-whole perception use ‘bottom-up’ methods for an empirical investigation of PWO as being both ‘from below’ and ‘from above’, while in the second chapter on Husserl the argumentation had a ‘top-down’ fashion via a priori reasoning, but could only arrive at a coherent perspective ‘from below’.

¹⁴⁴Cf. sections 5.2. and 5.3.

¹⁴⁵Contrary to my classification of traditional Gestalt theory as entailing one-sided dependency, Wagemans [2015: 5] states that according to Wertheimer, “specifiable functional relations exist that decide what will appear or function as a whole and as parts (i.e., two-sided dependency). Often the whole is grasped even before the individual parts enter consciousness.” Similar statements can be found in Wagemans et al. [2012a: 8, 39, 41] However, if there are indeed ‘specifiable functional relations’ (most probably principles of perceptual organization) that exist *before* and *in order to enable* the correlation between parts and whole, then there is at least a one-sided dependence of this correlation on the pre-existing functional relations. These relations then, as Gestalt principles, cannot occur when parts are given in isolation (let us suppose for the sake of the argument that this is at all possible), but only when there is a whole in and for which the parts function as parts. The parts thus presuppose the whole in this view. On the other hand, as Wertheimer shows in his studies on apparent motion, there can be perceptual wholes that ontologically speaking do not presuppose corresponding stimulus parts, which is in general confirmed by the refusal of the constancy hypothesis. Therefore, and given Wertheimer’s own statements concerning the importance of a ‘procedure from above’, I think we should be careful with and at least justify the attribution of two-sided dependency to the paradigm of traditional Gestalt theory.

the determination of PWO.¹⁴⁶

The first positive aspect (\oplus_1) of Ehrenfels' theory is his distinction between temporal and non-temporal Gestalt qualities. In proceeding from the famous example of the melody, Ehrenfels stresses that there are not only static wholes which are grasped in one single glance, i.e. "those for whose foundation distinct temporal determinations of the separate objects of presentation are not required", but that for many perceptual wholes we need time to adequately grasp them. This is not only the case for melodies, but also for spatial movement and, in general, any perception that involves change over time. It goes without saying that the idea of a perceptible back-and-forth movement of parts and whole falls under the temporal category.¹⁴⁷ To me it seems that this is different than the Berlin school's version of Gestalt theory, which is why I see a negative aspect (\ominus_3) here that should be avoided in a theory of two-sided dependency. Although Köhler [1975: 152] writes that in "the most general case of sensory organization, both space and time are involved in a given experience of grouping", in many cases in which principles of perceptual grouping and *Prägnanz* are demonstrated, the most important result is the first impression an observer has of a given entity. This entity is then often identical with its whole-character (its being a Gestalt) and not with the appearance of the local parts as parts. Even if we assume a temporal movement from global to local over time,¹⁴⁸ we start with the immediate impression of the whole's holistic properties and cannot but regard the appearance and mode of existence of the parts as fundamentally dependent on the whole, i.e. as mediated by what has been given immediately.¹⁴⁹ This may be sufficient for controlled laboratory experiments with dots and lines, but to me it seems that in normal life we usually have the freedom and the capacity to absorb a perceptible entity over time: to observe and check its properties, to view it from different angles, to sense internal and external ambiguities or coherencies, to let it gradually come into its own, in short, to acquire its meaning in a temporal process. It is not by the first glimpse and whole-impression, but only by letting a

¹⁴⁶The following numbering of the aspects refers to the order in which they appear in the table at the end of this section. These advantages and disadvantages only refer to the preceding presentation of the respective theories and therefore put up with possible counter-arguments that rely on literature or research beyond the scope I could provide.

¹⁴⁷Moreover, in his *Weiterführende Bemerkungen* from 1922, Ehrenfels [1988c: 162-167] provides an – albeit vague and poorly conceived – reflection concerning the ontological status of Gestalt qualities. Therein, he grants the temporal category a much higher degree of reality, since the perception of a temporal Gestalt necessitates a past in which perceived elements remain available to complete the perception of the whole. For instance, even if at the present time t_4 , a melody's tones a_{1-3} at t_{1-3} already died away, they are as parts in the past, still perceived and connect with the present a_4 as well as future tones a_{5-7} of the same melody $m\{a_{1-7}\}$. In order to grant reality to the melody as a whole, Ehrenfels classifies the past as a *topomorphic* dimension, as a fourth dimension of space that is as real and constant as the spatial dimensions. The present then is the *chronotopic* moment in which the *chronomorphic* flux of the future (the not-yet-being) falls into the being of the past, like a waterfall down a cliff into the ocean, and continues to exist, i.e. does not vanish there into not-being-anymore. Therefore, a temporal Gestalt has a higher degree of being, since its time span, i.e. the topomorphic time-space it takes up in the past, is bigger than the instant a non-temporal Gestalt requires. Accordingly, in this ontological framework of time conceptualization, an ongoing oscillation between parts and whole would enjoy a high degree of reality since it can reach into the 'still-real' of the past.

¹⁴⁸Cf. Navon [1977: 354].

¹⁴⁹Cf. Petermann's [1932: 48] critical evaluation of Gestalt theory: "And at the basis obviously lies the view that in these gestalt factors we are concerned with *absolutely primary manifestations*, with the *most primordial moments of action*, by which all phenomena, as far as these can be reduced to the factors, are *explained* with entire adequacy."

perceptual entity develop over time that we are able to interpret what Koenderink calls its ‘multiple possibilities’ of being a meaningful world on its own.¹⁵⁰

In so doing – and this is a second negative aspect (\ominus_4) of Gestalt theory in the Berlin tradition for a theory of two-sided dependency –, it should be legitimate to attribute *prägnant* ‘goodness’ not only to the perceptual whole or to our perceptual tendency towards stability of the perceptual field alone, but first and foremost to the development of a Gestalt’s meaningful interplay between parts and whole over time. I find it difficult and even artificial to measure a Gestalt as ‘good’ mainly on the grounds of the *lawfulness* it imposes on its parts. For Rausch, this *lawfulness*, as the first and primary aspect of *Prägnanz*, even determines the intrinsic meaning (*Sinn*) of a Gestalt and its usefulness (*Fruchtbarkeit*).¹⁵¹ Thus a whole that does not impose order but allows for heterogeneity would be devoid of meaning (*sinnleer*), and the parts are only ‘good’ if they fit into the whole.¹⁵² For the perceptual realm and beyond, it is rather implausible to think that imposed *lawfulness* ‘from above’, i.e. unidirectionally from the whole to the parts, is what makes something fruitful, ‘good’ and meaningful. Furthermore, although almost all of the objects of everyday perception are ‘imperfect’ in a geometrical sense and often ambiguous or neutral regarding an explicit regularity, we are surrounded by and surround ourselves with perceptible entities that we more or less consider as ‘good’. It is like in art, where not only a perfectly regular Mondrian, but also a seemingly chaotic Pollock is pregnant in every sense of the word. The meaning of ‘goodness’ for everyday perception is much richer and more context-dependent than what ‘goodness’ amounts to in the context of experimental Gestalt theory. For many people and in many situations, irregularity, asymmetry and unconformity can be much *better* and even more beautiful and reasonable than regularity, symmetry and conformity.

However, while this imposed lawfulness from above gives a whole too much dominance on its parts, it is another extreme to claim with Ehrenfels (\ominus_1) that by removing the additional Gestalt quality, a perceptual whole is fully decomposable into its basic (stimulus) parts such that these are isolated. Isolation implies that a basic part that is isolated would not stand in any relation to another entity with which it could produce a Gestalt quality but instead exists only in and for itself. Both Rausch¹⁵³ and Smith¹⁵⁴ argue that this is impossible: While the

¹⁵⁰“That you entertain multiple possibilities can be shown operationally when you let the picture develop over time in a movie-like fashion. There will be different degrees of surprise for various developments. You will buy many different movie shreds as ‘natural’, thus revealing the indefiniteness of the initial percept. The problem occurs in real life. It is not just a fancy theory or mere philosophising.” [Koenderink 2001: 6–7] I will come back to this idea from Koenderink in the next chapter.

¹⁵¹“Die Bedeutung von p_1 ist entscheidend durch ein Füllelement bestimmt, nämlich durch *Sinnfülle* (im Gegensatz zur Sinnleere oder Sinnarmut von q_1). ‘Sinnvoll’ gehört zu den treffendsten Ausdrücken, mit denen man das, was mit p_1 gemeint ist, bezeichnen kann. Diese Fülle ist natürlich von anderer Art als die der p_5 bis p_7 . Sie ist nicht durch einen ‘Inhalt’ gegeben, wie bei p_6 und p_7 , sondern liegt in dem gesetzmäßigen Gefüge selbst beschlossen [...]. Der in der Gesetzmäßigkeit liegende Sinn ist vor allem ein solcher, der *fruchtbar* ist, Konsequenzen hat (und ziehen läßt).” [Rausch 1966: 946].

¹⁵²“Ebenso können, wie bei dieser Gelegenheit angemerkt sei, für das Prädikat (bzw. Attribut) ‘gut’ nicht nur – wie im allgemeinen gebräuchlich – Gestalten, sondern auch Gestaltteile, in ihrem ausgesprochenen Teilcharakter, als Träger fungieren. In diesen Fällen bedeutet ‘gut’ so viel wie ‘passend’, ‘zum Ganzen passend’.” [id.: 940, fn. 53].

¹⁵³Cf. Rausch [1966: 888–890].

¹⁵⁴“From Ehrenfels’ point of view, a Gestalt quality (whole-property) disappears when we isolate its parts. A thesis of this sort can be formulated also for part-properties, and we can see that it holds (to a degree) only for certain quite specific kinds of ‘natural’ part (for example of stones in a heap, where the property of

act of isolating a part from a whole might be possible if the part is relatively independent to the whole in question, normally a part can never enter a state of complete isolation, because it immediately forms new relations and (gets integrated into) wholes. Even to *think* of a completely isolated element is impossible without imagining it as appearing on a background, which implies that there is at least a figure-ground relation that prevents the state of being isolated by adding what Smith calls an ‘isolation-property’.¹⁵⁵

This is closely connected to a second negative aspect (\ominus_2) of one-sided dependency à la Ehrenfels. Not only can a part not be fully isolated, but it is also problematic to assume that a part is invariant, i.e. that it does not undergo internal changes – whether empirical, functional, or sociocultural – when it enters into another whole. As Smith [1994: 281] writes, “[a] part does not, on being separated, exist merely *in vacuo*, but always in some context in which it contributes to new Gestalten and thereby undergoes various functional changes within itself. A Japanese glass pyramid appears in one context as a fitting, proper part of its environment; translate it to a different context, and it will stick out as an alien body.” This can even be said of a perceptual whole itself: Although such a whole is theoretically transposable into different contexts (e.g. the same melody is playable on different instruments or octaves or cultural events), it does not remain exactly the same when its parts or the wholes in which it is situated as a part change (at the least the melody sounds different at different octaves; it has a different sociopolitical connotation depending on where and when it is played; how it sounds also depends on the technical medium through which it sounds).

Whereas I consider isolation and invariance to be two negative aspects of Ehrenfels’ theory, his reflections on the danger of infinite proliferation of Gestalt qualities are invaluable for any conceptualization of a part-whole theory that allows for two-sided dependency (\oplus_1). Although the members of the Berlin school were also philosophically trained (and partly held chairs for philosophy), to my knowledge they seem to be less concerned with this problem. Mulligan and Smith point out that Ehrenfels even refused two-sided dependency to avoid risking the logical pitfall of having to assume that “[e]very arbitrary complex of given sensations, however delineated, would give rise to a Gestalt quality of its own.” [Mulligan et al. 1988: 132] But is two-sided dependency unthinkable without infinite proliferation? I will show in the following that all logically possible wholes do not automatically come into existence as soon as we include the notion of (perceptual) meaning into the perception of Gestalts as their existence condition. This can best be demonstrated by using and experimenting with visual figures – and herein lies a positive aspect of Gestalt theory, particularly of the Berlin tradition (\oplus_3): its methodical reliance on an ‘experimental phenomenology’¹⁵⁶ that makes the phenomena that are researched

being for example at the top of the heap simply disappears when the heap is taken apart). Rarely, however does isolation of parts lead to a mere loss of properties: neither whole-properties nor part-properties are simply added extras which spring into existence at the moment of unification and disappear on isolation. For isolated parts qua isolated have peculiar characteristic features of their own, which depend on the one hand upon the peculiar features of their new environment and on the other hand upon what they bring with them from the old.” [Smith 1994: 280]

¹⁵⁵Cf. id. [280].

¹⁵⁶Lobb [2016: 41] writes in this regard: “From the beginning of the 20th century, Gestalt theory has developed the phenomenological perspective in European psychology, using a research method (referred to as phenomenological or experimental phenomenological) based on an accurate description of the immediate experience of situations(-stimulus) by individuals. Hence, the study of perception was put in the spotlight, and the focus was shifted onto senses and sensory experience.” Cf. MacLeod [1964] on the relationship

both directly accessible and intersubjectively valid. Koenderink writes in this regard that “[r]esearchers in the Gestalt tradition frequently use the method of ‘compelling visual proof’. One prepares an optical scene, and collects the majority community opinion on the structure of immediate visual awareness in the presence of the scene. In cases of striking majority consensus, one speaks of an ‘effect’.” [Koenderink 2015a: 46] This inductive-empirical method of visual proofs is thus, also in accordance with the argumentation about the methodology of the present project,¹⁵⁷ a positive aspect of Gestalt theory that I would like to maintain for the development of a two-sided part-whole dependency for PWO.

Together with this, the postulation and demonstration of principles for perceptual grouping, regardless of the specific nature and number of these principles, is not only convincing due to the method of visually proof. It also structures Gestalt theory *as* a theory and thus makes it pregnant on its own such that *Gestalt principles* are – by means of metonymic mapping – adequately conceivable as *Gestalt theory principles* and vice versa. The postulation of principles (\oplus_4) is thus as factually appropriate as it is methodologically and meta-theoretically useful. For these reasons, it is worthwhile to suggest, based on recent literature on Gestalts, a number of plausible principles for two-sided dependency and thus for the idea of PWO. What this simply amounts to is to proceed with the formulation of principles for PWO’s ontological nature, which started with PWO_{ded} as a result of its formal-ontological absence, and continued with PWO_{ind_lang_1-3} for its identification as conceptual metonymy.

In sum, my evaluation of certain major aspects of the two discussed approaches to one-sided part-whole dependency with either part primacy (Ehrenfels) or whole primacy (Berlin school) looks as follows:

Ehrenfels (part primacy):	Berlin school (whole primacy):
\oplus_1 Temporal Gestalt development	\oplus_3 Method of visual proof
\oplus_2 Reflections on infinite proliferation	\oplus_4 Postulation of Principles
\ominus_1 Isolation of parts	\ominus_3 Non-temporal first impression
\ominus_2 Invariance of parts and whole	\ominus_4 Goodness is imposed from above

In the next chapter and by drawing on recent developments in the research on Gestalts, I will indicate how these aspects can be accounted for and how, in so doing, a more dynamic and equipollent relation between parts and whole compared to the ones introduced so far could be conceivable.

between phenomenology and experimental psychology. Cf. Bischof [1966: 27–40] and Toccafondi [2011] on the differences between Husserlian and experimental/psychological phenomenology. Cf. Laguna [1930] and Feest [2014] for a critical discussion of the first-person method of phenomenological introspection in Gestalt theory.

¹⁵⁷Cf. chapter 1, in particular section 1.3.

7 Gestalt Theory II: Part-Whole Interdependency

7.1 Perceptual Meaning: B. Pinna

A good way to begin with the ontological determination of PWO as involving part-whole interdependence in perception and maybe also beyond is by focusing on the parameter of *meaning*. To do so, it is worthwhile to take a look at the recent research by B. Pinna in this regard. In a number of partly co-authored publications, Pinna¹ suggests what seems to be a major shift within the Gestalt theoretical paradigm of the primacy of the whole at the expense of the singularity and heterogeneity of parts. As we have seen, this primacy of the whole is safeguarded by the empirical evidence of Gestalt principles of grouping, particularly by the meta-principle of *Prägnanz* which – put simply – measures the goodness of a Gestalt by means of its regularity and lawfulness. Pinna however argues that principles of grouping, as well as the segmentation of figure and ground,² are only one of three forms of organization by which we immediately perceive an entity as a Gestalt. The other two forms of organization are shape and perceptual meaning: “Human perception goes beyond the perception of appearances and figures versus backgrounds. It is mostly perception of shapes and meanings that are at the basis of the construction of perceptual ‘objects.’” [Pinna et al. 2010: 288]

How does shape differ from grouping? According to Pinna et al. [id.: 318], the “form of grouping puts together the elements, while the form of shape draws the perceptual structure and spatial attributes of the figure both locally and globally.” For example, while the four lines of a perceptible square, firstly, have to be segregated from a background on which they appear and are, secondly, the square’s elements that are grouped together according to principles such as *similarity* (the four lines have an equal length), *proximity* (the closer the endpoints are to each other, the more unitary the square becomes) and *closure* (a perfect square is a closed region), the square, as such, is a shape that organizes our perceptual field like it is organized by figure-ground and grouping relations.³ But also, the line itself already has a shape and can, on the basis of this shape, be grouped with *similar* shapes. Within our perceptual field, there is thus a hierarchical relation of perceptual steps that make a perceived entity appear as a unitary whole via the crossing of different levels: “The first perceptual step is the ‘segregation’ of each component from the background. The second one is ‘putting together’ or grouping the segregated elements in homogeneous wholes on the basis of similarity of shape.” [Pinna et al. 2009: 228] In addition to the principles of grouping, this second step involves specific principles for shape formation, i.e. shape properties that are not explainable by grouping principles, such

¹Cf. Pinna et al. [2009; 2010; 2010; 2011b; 2011a; 2014].

²Cf. section 7.4 below.

³Cf. Pinna [2011b: 384].


as a shape's sidedness, pointedness, headedness and organic segmentation.⁴

This means that not only grouping, but also shape formation accounts for the unity and lawfulness of a Gestalt, which is why the more innovative extension to the view of the primacy of the whole without falling back into the primacy of the part à la Ehrenfels only happens in the third and fourth step:

“The third is the complementary ‘separation’ and the clear distinction of the wholes on the basis of dissimilarity. Similarities and dissimilarities lead to the fourth and final step, where all the differentiated wholes and each single element are put together again by virtue of another and more global grouping factor that overcomes the dissimilarities of the components: it is some kind of *meaning* principle that perceptually solves the differences among wholes and elements at a higher level making them appear strongly linked just by virtue of the differences. In this way similarities and dissimilarities complement and do not exclude each other. This can be the level where the perceptual meanings are established.” [id.: 228–9]

According to this progression of perceptual steps, which actually are “arbitrary phenomenal separations of a perceptual result that appears indivisible” [id.: 229], to imbue a Gestalt with perceptual meaning presupposes the recognition of a whole's parts not only as participating in this whole's homogenous unity, but also as embodying a heterogeneous diversity through which the proper nature and role of a part *as* part is significantly increased. This seems to be an important move not only beyond lawful integrity as the (only) perceptual and ontological measure of a good Gestalt, but also beyond former tendencies either to *reduce* the notion of meaning to ‘past experience’,⁵ or to define the meaning of a Gestalt *in terms of* its lawful integrity and thus as a purely structural feature.⁶ To show how perceptual meanings instead *emerge*⁷ from structural features of grouping and shape formation, Pinna employs “a free-report (phenomenological) method in which untutored, naïve subjects are given a carefully-chosen series of visual stimuli and asked to report anything they see.” [id.: 232]⁸ The figures of the visual stimuli thus serve as (potential) visual proof of the occurrence of the three forms of organization: figure-ground/grouping, shape, and perceptual meaning.

7.1.1 Meaning as Happening of the Parts to the Whole

To effectuate this proof in a simple way, Pinna provides, among others, square-like figures. He argues that the prototype of a square looks as follows:  If you tell somebody to draw a square, there is a high chance that this person will draw it like this, and in order to describe this figure,


⁴Cf. the overview in Pinna [2011b: 415].

⁵Cf. Rausch's seventh aspect of *Prägnanz*. Even Pinna himself regards it as a potential disadvantage of his notion of ‘perceptual meaning’ that it might necessitate past experience: “The cons of perceptual meanings are that the process of their formation is strongly related to cognitive processes placed at a higher level and involving past experience. For these reasons it can be difficult to separate perceptual from cognitive meanings.” [Pinna et al. 2009: 268]

⁶Cf. Koffka [1925: 546] and Rausch's [1966: 946] first aspect of *Prägnanz*.

⁷Cf. section 7.3 on what emergence entails in this context.

⁸For the precise experimental arrangement, cf. Pinna et al. [2009: 233–4] and Pinna [2010: 12–14]. Subsequent to this phenomenological method, Pinna also uses a quantitative method of scaling, in which a second group of subjects rates the descriptions of the first one on a scale from 0 to 100.

only one word is needed: ‘square’. This shape therefore has a ‘phenomenal singularity’, which Pinna defines as “the instance of a shape that does not need to be defined by attributes and that correspond[s] to a one-word description. In other words, the phenomenal singularity is *the best instance* of a specific shape.” [Pinna 2011b: 388] With this square as a starting point, we can firstly see that the organizational form of the shape might change while the grouping principles of the elements remain the same. By rotating the shape by 45°, for example, we receive the shape  which relies on the same grouping principles and which is as phenomenally singular as the square, but to which another one-word description corresponds: ‘diamond’. This is also known as Mach’s square/diamond illusion, “according to which the same geometrical figure is perceived as a square when its sides are vertical and horizontal, but as a diamond when they are diagonal.” [id.: 390] Pinna explains this illusion by postulating certain principles of shape organization, viz. pointedness and sidedness.⁹ These principles do not belong to the category of grouping principles, but likewise arrange for a percept’s homogeneity.

Secondly and beyond both grouping and shape, however, we can see that when we rotate the square only a little bit ($\sim 10\text{--}35^\circ$), then the rotation does not result in another stable phenomenon such as a diamond, but remains a square: a ‘rotated square’. This means that more than one word is needed to describe this shape and that the additional word ‘rotated’ functions as an attribute that specifies what *happens* or *happened* to the shape.¹⁰ Thereby, analogous to the relation between an adjective/verb and a noun in a sentence, the relation between the attribute and the shape is asymmetrical: It is not possible that the shape happens to the attribute.¹¹ At the same time, however, shape and attribute “define themselves reciprocally” [id.: 389] such that one cannot be perceived without the other. This attributable notion of *happening*, which is perceptible and describable the more a Gestalt does not display a perfectly homogeneous grouping and regular shape, is what gives perceptual meaning to a Gestalt. It divides the perceived structure into two or more parts (e.g. a square and a rotation) and then combines these parts again to a meaningful whole: Something must have happened to the square.

Of course, being rotated is not the only thing that can happen to a square, and normally more than two words are needed to describe the happening. Pinna presents a whole list¹² consisting of figures “where the square and its sides or angles appear as beveled, broken, crashed, gnawed, deliquescing, deformed, protruding”, whereby the “changes and happenings can be seen as depending on or related to specific and ‘invisible’ but perceptible causes affecting the shape

⁹“If a square shape is made up of sides and angles, then it shows phenomenal properties such as ‘sidedness’ and ‘pointedness’ related to these components. These two properties are only apparently equipollent. The square/diamond illusion demonstrates the vividness asymmetry between these properties. In the square the sidedness appears stronger than the pointedness, while the diamond shows more strongly the pointedness. [...] In fact, in all the conditions illustrated sidedness and pointedness are not in contrast but either the sidedness or the pointedness are attenuated or emphasized, thus weakening only one of the two effects. This entails that one of the two singularities is weakened, therefore appearing as a rotation of the other.” [Pinna 2011b: 395–6]

¹⁰Cf. id. [389].

¹¹“A rotation cannot have a shape, while the shape can have a rotation. This suggests a clear asymmetrical hierarchy between the two terms. The shape is primary, earlier in time and order than the rotation. Therefore, the shape is a noun and as such it is a word generally used to identify a class of elements. As a noun, the shape is like ‘a thing’, which can appear in many different ways, and the rotation is one of this ways of being of the shape, i.e. the attribute of that specific thing.” [id.]

¹²Cf. Pinna [2009: 251; 2010: 55; 2011b: 387].

and the material properties of the square. They add visual meanings but do not really change the shape of the square, which is perceived like the amodal invariant shape supporting all those happenings [...]” [id.: 387] For example, while test subjects describe a square whose upper right corner is replaced by an irregular zigzag line as “shattered like a windowpane” and “made of glass” [Pinna et al.: 2009: 250], the replacement of the corner by a roundish doodle makes subjects describe the square as “expanding and spreading some dense liquid matter” [id.: 252] Such meanings in terms of happenings are neither reducible to grouping nor to shape, but are instead “directly and immediately perceived without any cognitive mediation but as a result of some kind of part-whole organization eliciting perceptual meanings [...]” [id.: 247] Furthermore, in many cases the resources provided by natural language are insufficient to describe the perceptual meaning, which allows Pinna to presume that perceptual meaning is prior to propositional meaning.¹³

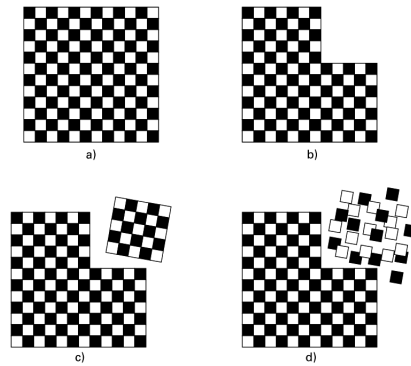


Figure 7-1: *Meaning as happening*¹⁴

Pinna further demonstrates the way in which the organization of parts and whole creates perceptual meanings by letting subjects describe variations of a checkerboard. Figure 7-1 shows a complete checkerboard, which is already, before anything ‘happens’ to it, neither reducible to the form of shape nor to principles of grouping, because the “alternation [of black and white squares, M.S.] creates some kind of homogenous structure with a precise meaning. This meaning is not due to its being a checkerboard because we know and use it as a checkerboard; rather, we know and use it as a checkerboard because it has that meaning.” [Pinna et al. 2010: 324] But the meaning the checkerboard displays becomes even stronger as soon as it seems to undergo or to have undergone any changes, i.e. as soon as something (a change, a cause, an influence, a former or later state) is immediately seen although is not actually given, neither as stimulus, nor as group, nor as shape. In the case of b), for example, beyond the 135 stimulus parts, beyond the alternative of a black or a white background/foreground, beyond the two groups of black and white parts based on the *similarity* principle, and beyond the shapes of these parts as squares as well as the shape of the whole as a geometrical figure with six borders, what subjects perceive and describe is a ‘mutilation’ of the complete checkerboard, caused by a ‘removal’ of a ‘large piece’ from the top right corner.¹⁵

¹³This presumption is congruent with the distinction between meaning_{prop} and meaning_{perc} drawn in subsection 4.1.1 above.

¹⁴Reproduced from Pinna et al. [2010: 326]. These figures are reprinted courtesy of The MIT Press from *Perception beyond Inference: The Information Content of Visual Processes*, edited by Liliana Albertazzi, Gert J. van Tonder, and Dhanraj Vishwanath. The reproduction is kindly permitted by MIT Press.

¹⁵Cf. Pinna et al. [2010: 324].

What completes the checkerboard is here defined by the absence of the whole's part and by the accentuation this absent part gives to the whole. Without the absent part, the whole itself would be incomplete. Thus there has to be a distinction between part and whole in order to make both the part (as a removed element) and the whole (from which an element is removed) meaningful in perception. This necessity of part-whole distinction in which both define each other's meaning is also the case when the parts are present but not connected to the whole by grouping and shape, such as in c) and d). Instead of seeing two different wholes of grouped parts and two distinct shapes in c), or a whole of grouped parts, a whole of ungrouped parts and various shapes in d), both c) and d) appear as unified figures in which something happens to the whole in its upper right corner. This is because "in the form of meaning, even different elements like these are put together and assume a meaningful kind of organization [...]. In the form of meaning, anything can stay with anything else and become meaningful, provided that the invariants are maintained." [id.: 328] As long as the invariant checkerboard as the subject of the happening is maintained, we can even perceive a static instance of it as actually being in movement, i.e. as standing in a complete temporal sequence of which only an incomplete snapshot is given.¹⁶ Participants of the experiment thus described the separated part in c) as 'tumbling down'¹⁷, whereas the scattered squares in d) 'seem to fly'.¹⁸ Of course, the parts do not actually fall down or fly away, but it is the plausibility of this interpretative as-if character and its immediacy in perception that vivifies the phenomenon and stimulates the observers' ability to make sense even of seemingly disparate and unorganized impressions.

Examples like these show a remarkable feature of meaningful part-whole organization: the simultaneity of *amodal completion*, which makes a whole complete on an ideal level, and *modal incompleteness*, which occurs on a contingent level due to the deviation from the ideal level via happenings in the parts. In this simultaneity, the "ideal and contingent levels are not perceived in the same way: the former is perceived amodally, the latter modally. The complete *whole* (the square) is seen amodally (amodal completeness), while the incomplete *whole* (irregular shape) modally (modal incompleteness). Similarly, the complete *part* (the absence that at the ideal level is filled with what is missing) is perceived amodally, while the incomplete *part* (the absence as it is perceived) modally. Both ways coexist and reinforce each other." [Pinna 2010: 58] It is worth noting that in this distinction between the contingent and the ideal level, Pinna defines as part of a whole the absence of a part itself. It is this absence, which is one of a whole's parts, that determines the character of the whole and vice versa. It even seems that absence not only refers to the invisibility of a part, but also to the invisible cause of a part's absence or a part's removal, such as in c), and to a temporal sequence, for example of shattered parts flying away in d). In the latter case, it is the perceptible yet invisible absence of the temporal sequence that is a part of the Gestalt, whereas the temporal sequence itself is a whole for which the momentarily visible Gestalt is a part. Thus via one of its parts, a whole becomes itself a part.¹⁹ Absence, instantiated by a happening, is thus both the reason for a whole's separation

¹⁶"The temporal structure of the presentation, therefore, has to be considered as a constitutive component of the field structure of perceptual phenomena because it is in the extension of an act of seeing that we apprehend the being-before or being-after of phenomena, or simply their permanence." [id.: 325]

¹⁷Cf. id. [324].

¹⁸Cf. id. [325].

¹⁹"In fact, the information pertaining to the act or process of elongation is not given by the static image but by a series or succession of implicit images (snapshots of evolution), of which the given image is a *nonindependent*

into parts (one of which is the absence itself), and the reason for the unification of parts and whole on an ideal level. In Pinna's own words:

“From the previous figures, it follows that the form of meaning and its processes of meaning assignment obey apparent antinomic rules. On the one hand they put together everything, so that everything can stay with everything else in a meaningful way. This imparts unity, integrity and homogeneity among all the components. On the other hand, they divide, segregate or break the homogeneity, thus appearing as the opposite of unity, integrity and homogeneity. These two antinomic dynamics are not equivalent to the grouping/segregation formed by the gestalt principle of similarity placed at another perceptual level. In the form of meaning the two dynamics do not annul or weaken but strengthen each other by creating the two perceptual levels (ideal and contingent) we previously mentioned. Therefore, what is segregated becomes the happening, i.e. something different from the main meaning (subject). The happening is discounted but at the same time it becomes part of the subject by qualifying it and explaining in terms of action the reason for the loss of homogeneity, integrity and unity of the subject. In this way the subject can assume, establish or restore its homogeneity that is like a basic assumption within the process of meaning formation. In other words, differences, variations and lack of homogeneity become the special emerging meanings that we called ‘happenings’, whose aim is to create homogeneity and, hence, unity. The paradox of meaning is avoided by creating and organizing the resulting meanings in the two perceptual levels already mentioned: amodal/ideal and modal/contingent.” [Pinna 2010: 66]

Here lies the most important aspect for the context of the present project. Through the introduction of perceptual meaning into the Gestalt discourse, the primacy of the whole in a purely structural sense is accompanied by a fundamental role played by the parts. These account for the heterogeneity, i.e. meaningful many-sidedness of what can happen or has happened to the homogeneity of the whole. Only this interplay and mutual reinforcement of ideal unity as ‘amodal wholeness’²⁰ and contingent discontinuity as ‘modal partialness’²¹ can be the presupposition for a higher level of unity, a unity that unites structural whole homogeneity (what a Gestalt is in the traditional sense) and part heterogeneity (what a Gestalt is not or is less in the traditional sense). In the face of this mutual part-whole interplay that is connected to the appearance of perceptual meaning, we could say that neither the rather atomic, pre-Gestaltist conceptualization of parts holding that *many are many*, even if agglomerated, is fully correct. Nor is it appropriate to exclusively hold with the rather traditional Gestaltists the view that *many should be one* to be a ‘good’ Gestalt. In combining both as a fruitful antinomic tension, the integration of meaning as happening in perception enables the idea that *many become few*, which is one of the main properties of perceptual meanings: “Through the form of meaning many elements are reduced to few integrated meanings.” [id.: 72]

part and to which it implicitly refers.” [Pinna 2010: 323]

²⁰“We call ‘amodal wholeness’ the vivid percept of object unity and wholeness even though the observer does not actually see a contour in regions where the completion of the whole object occurs at a level after the ‘happening’.” [id.: 69]

²¹“We call ‘modal partialness’ the clear modal emerging of a specific happening that occludes the completion of one part of the complementary region, such as a square, that appears as the whole.” [id.]

7.1.2 Many Become Few, But Not One

The idea of *many become few* contains some of the essential characteristics of meaning in perception. Firstly, ‘many’ points to the fact that in order to perceive visual meanings, it is not sufficient to notice only a whole as an ideal entity that is primary to and determinative for its parts. For a Gestalt to have meaning entails noticing parts of it that are either dissimilar to the whole, such as a zigzag line that replaces the edge of a square; or absent from the whole, such as a missing piece of a checkerboard; or standing apart from the whole, such as a number of unordered squares that seem to fly away from the whole. It lies in the nature of a happening to evoke perceptible discontinuities between parts and whole: “Every happening is a discontinuity that accentuates one or more properties of the main shape. This discontinuity gives meaning to the shape [...]. Furthermore, in the same way as the happening (the geometrical discontinuity) imparts a meaning to the shape, the shape imparts a meaning to the discontinuity.” [Pinna 2011b: 414]²²

Secondly, ‘become’ indicates the just-outlined temporal process of meaning assignment in the course of the happening. In theory, this process continues even after the interplay of figure-ground/grouping/shape principles and part-discontinuity has resulted in the assignment of perceptual meanings, because every addition or removal of a part, i.e. every change of a Gestalt’s properties, as well as every new relation of a Gestalt with another Gestalt, might result in new meaning assignments. Pinna calls this property of the form of perceptual meaning its ‘high connectedness’: “The form of meaning can involve a large number of components with many feedback loops that enable the system to restructure promptly. By comparing one figure with another, the emerging form of meaning can change depending on whether it is perceived alone or compared with a new figure. This is because the new figure becomes a new component and therefore part of the whole meaning.” [Pinna 2010: 71] Perceptual meanings are thus always in an actual or latent state of becoming, i.e. they possess a high degree of variability,²³ and, in addition, it is impossible to perceive without meaning, since “[e]ven the most senseless pattern creates and communicates a meaning.” [Pinna 2010: 72]

This does not mean, however and thirdly, that the pitfall of an infinite proliferation of meanings persists. The ‘few’ indicates that out of the complex manifold of every Gestalt’s part-part, part-whole and whole-whole relations, only a few possible perceptual meanings do in fact result. Although new meanings are always possible due to the restructuring and interrelating of a Gestalt and due to the perceptibility of heterogeneity and discontinuity, which also allows for creativity and novelty, it is the essential characteristic of meaning in perception that it is economical in nature. Not all possible meanings are equally plausible, and simplicity absorbs complexity such that “[d]iscontinuities, divergences, contrasts, and paradoxes are solved and ‘explained’ within a whole meaning. The components are restructured in a meaningful manner: The discontinuity becomes the predicate (happening) of the subject (amodal meaning).” [Pinna et al. 2010: 336] Furthermore, once a perceptual meaning is attributed to a Gestalt, this

²²Cf. also Hoffman et al. [1984], who points out that and why our visual system recognizes objects by decomposing their shapes into parts along the shape’s contours. The step from a grouped or shaped whole to its partitioning is thus also significant in the field of visual object recognition, which might correlate with the structurally similar move towards part-articulation for the development of perceptual meanings.

²³“The happenings manifest chaotic behaviors, in the sense that very tiny variations in the happenings can induce a huge variation in their meanings. This implies a great instability that is the source of mutations and creativity of the meanings. This is the basis of the creativity of vision.” [Pinna 2010: 71]

meaning is resistant to changes, which means that the process of happening often leaves a particular meaning intact instead of constantly creating new meanings. This is the invariability of perceptual meaning, which does not contradict but reinforces its equally essential variability²⁴ and which allows for a veridical description by observers.²⁵ Although Pinna does not explicitly address the problem of infinite proliferation, we can reason from this that instead of creating meanings *ad infinitum* and in so doing implying (an ultimately meaningless) relativism, the process of happening leads to a stable yet flexible finiteness and therefore communicability of a Gestalt's actual range of meanings.

To conclude, Pinna's introduction of perceptual meaning into the Gestalt discourse both makes possible a conception of two-sided part-whole dependency and in so doing accounts for the positive (\oplus) and negative (\ominus) aspects of the previously discussed Gestalt theories of one-sided dependency.²⁶ To begin with the latter, it emphasizes the temporal development of a Gestalt's meaning over time (\oplus_1 , \ominus_3) by placing it in the sequence of a happening, in which the whole functions as a subject and one or more of its parts as 'visual predicates'. The happening makes the whole contingent and heterogeneous (modal partialness). At the same time, it makes perceptible the absence of the whole's ideal state (amodal wholeness) that it would have had if it only fell under the principles of grouping and shape. The togetherness of present modal partialness and absent amodal wholeness creates perceptual meanings, which are, however, not infinitely proliferating (\oplus_2), due to the essential characteristic of perceptual meaning to unite parts and whole(s). Hence *many become few*.

On the one hand, the meaningful unification of parts and whole(s) does not allow for parts to be isolated while keeping the meaning they obtain and give to the whole in the course of the happening (\ominus_1).²⁷ On the other hand, and apart from isolation, in principle any changes of parts and whole that leave the hierarchy intact are possible and can lead to novel perceptual meanings of a thus variable Gestalt (\ominus_2).²⁸ Instead of applying a priori reasoning or thought experiments, Pinna's research on perceptual meaning makes use of the empirical method of visual proofs and free descriptions of what is visually presented, with all the advantages this particular method and, in general, the inductive-empirical method brings about.²⁹ One of this method's most important research results for the present project is that meaningful Gestalts, i.e. Gestalts that are dynamic due to changes in their parts, are mostly imperfect as measured by *Prägnanz* and principles of grouping: Meaningful Gestalts can be distorted, deformed, internally

²⁴"The form of meaning manifests a strong resistance and adaptability to changes. By introducing variations, changes and happenings the whole meaning tends to be modally invariant. This creates a great stability even to huge disturbances." [Pinna et al. 2010: 336]

²⁵"[...] 'happenings' are not fleeting but are consciously available to the participant for long enough to provide the substrate for a description that is capable of being transmitted verbally to the experimenter." [Pinna et al. 2009: 248]

²⁶Cf. the end of section 6.4.

²⁷"*Non-decomposability*: The emerging meanings are irreducible. The complex form of meaning cannot be resolved into isolated subcomponents without suffering an irretrievable loss of the meaning. Neglecting any part of the process of meaning assignment or severing any of its connections usually destroys essential aspects of the structure of meanings." [Pinna 2010: 71]

²⁸"*Hierarchical organization and centralized control*: The complex form of meaning manifests a hierarchical control with a structure similar to a perceptual language, but the power is spread over a decentralized structure that involves all the components. A number of units combine to generate the actual system of meanings, so that the meaning of one component depends on the meanings of the others." [id.]

²⁹Cf. subsection 1.3.2 and section 6.4.

heterogeneous and distinguished by the absence of parts. Perceptual meaning arises when something that is open to multiple interpretations happens or has happened to a perceptual whole. In order to notice the happening, we not only have to notice the given modal partialness, but value it in its own right, because it determines the amodal whole as it is determined by it. We have to notice and recognize at least the parts that are happening to the whole. Thus what H. Helson [1933: 25] describes as ‘the law of decompositional loss’, according to which the going back to a whole’s parts involves a loss of qualities, whereas only the composition of parts into a whole as a Gestalt “involves the creation of something new”, does not seem to fully apply to Pinna’s more dynamical and bidirectional framework. Probably, K. Bühler’s characterization of an analysis without ‘decompositional loss’ is more appropriate for this framework.³⁰ It also has to be remarked that phenomenological experiments with perceived squares and checkerboards are just methodically useful, simplified and inductively generalizable examples for this interplay of whole and parts through which perceptual meanings are created or noticed in everyday perception.³¹

The final result of this interplay, however, is again unity: not a unity of structural lawfulness, but a unity in which “many elements are reduced to few integrated meanings.” [Pinna 2010: 72] Like in a Hegelian dialectic, one concept (formal wholeness and continuity) is, by way of its negation (partialness and discontinuity), *aufgehoben* into a higher level of itself (meaningful wholeness and continuity). But I think that one has to distinguish more clearly between the process of meaning creation, which consists in the interplay of continuity and discontinuity during and because of the happening, and the created meaning, which is its result: a higher continuity, a more embracing simplicity. There is no doubt that both the process and the result are justified and necessary constituents of everyday empirical perception. There is also no doubt that the result can enter into a new process as soon as the parts and whole undergo more changes or are related to other Gestalts. However, the idea of simplicity as a sort of *causa finalis* of meaning creation somehow mitigates the importance of what goes on in the process of the happening itself. For example, Pinna et al. [2009: 228] write that “[a]s the whole meaning emerges, each component adjusts to it and takes on new perceptual properties derived from and synergistic with that meaning and, *vice versa*, the whole meaning emerges as a result of what is perceived in every single component.” On the one hand, this is a clear formulation of two-sided part-whole dependency, whereby the whole is the higher unity of the form of meaning.

On the other hand, however, it seems that as soon as a more or less stable meaning has been achieved, the discontinuity of the parts, which was the main expression of the happening the structural whole undergoes, ceases and is replaced by an adjustment to the emerged meaningful whole. But if the parts’ contingent lack of adjustment to their ideal structural whole is the condition for the emergence of a meaningful whole, if meaning thus presupposes diversity, then how can this meaningful whole keep itself in existence if it re-adjusts the parts such that no further diversity is perceived? In other words, if the perception of unadjusted parts makes the meaningful whole emerge, but if, at the same time, the emerged meaningful whole turns the

³⁰“Der Eindruck des Komplexen setzt sich tatsächlich aus Komponenten zusammen und darum zerstören wir, wo wir analysierend vorgehen, nicht mit jedem Schritt eine Gestaltqualität, um neue an ihre Stelle zu setzen, sondern wir heben nur bald dies, bald jenes Moment, das in dem Eindruck des verwickelteren Komplexes schon enthalten war oder wenigstens sein konnte, hervor. Und der erste, noch unanalyisierte Eindruck ist nichts prinzipiell anderes als der spätere, dem diese Analyse zugute gekommen ist.”

³¹Cf. the interpretation of paintings in Pinna et al. [2009].

perceptibly unadjusted parts into adjusted ones in order to meet the requirement for simplicity, then the question arises whether the result of meaning creation does not, in fact, contradict its own condition for coming into existence. Can perceptual meaning not instead be thought of as keeping the discontinuity of the parts intact such that the meaning itself is ‘kept alive’? This question requires a speculative answer that I cannot give for the moment.³² However, three other points can be provided to develop this question further: Firstly, I would like to elaborate on the intersection between the structural, ideal whole and the discontinuity of its parts, because it is only by the parts becoming discontinuous that a perceptual meaning emerges (section 7.2). Secondly, we need a clarification of the kind of emergence that is going on in the process of the creation of meaningful Gestalts (section 7.3). And thirdly, corresponding to the positive aspect of formulating principles (\oplus_4) and in addition to the already stated determinations PWO_{ded} and $PWO_{ind_lang_1-3}$, I suggest the following principle for the determination of PWO’s ontological nature in the sphere of empirical, meaningful part-whole perception:

$PWO_{ind_emp_1}$: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole become perceptually meaningful through mutual interaction that appears as a happening to the whole via its parts. This dynamic interdependency prevents both absolute whole homogeneity as well as whole primacy and absolute part heterogeneity as well as part primacy.

7.2 Splitting and Merging: J. Koenderink

For a Gestalt to be perceptually meaningful, i.e. to be interpretable as sustaining and manifesting a process of happening, it is necessary both to perceive a homogeneous whole and its heterogeneous parts, particularly if one or more of the latter are deformed or absent. Both sides condition each other. We might say, for example, that for most people a perceptually meaningful house is less a perfectly constructed new building in which every part fulfills a pre-determined aesthetic function for the whole, but rather a house in which the ravages of time have left their traces such that the discontinuous parts tell the story of the whole and vice versa. If we now look for a closer determination of the interface between ‘wholification’ towards homogeneity and ‘partition’ towards heterogeneity, an interface which occurs in the framework of Pinna on three different thresholds (stimulus parts \rightarrow_1 grouping/shaping perceptual whole \rightarrow_2 separated perceptual parts \rightarrow_3 perceptual meaning as unifying perceptual whole and perceptual parts) within one and the same phenomenon, it is helpful to turn to the ideas of another contemporary scholar working in the field of Gestalt theory: J. Koenderink. In fact, it is just one particular idea that Koenderink only sketches briefly, but which I think could nonetheless enhance the understanding of the parts-whole interface for meaningful Gestalts. This is the idea of ‘splitting and merging’.

³²Cf. on this question ‘Dif₆’ in section 7.3 below and a suggestion for answering it by parallelizing part-whole reversals with figure-ground reversals in 7.4.

7.2.1 Visual Awareness and the Multiple-World Hypothesis

These two perceptual processes are embedded in a broader framework that Koenderink has developed in a number of recent publications³³ under the heading of ‘visual awareness’, which is the specification of ‘perceptual awareness’ to the visual domain. The notion of visual awareness is in conformity with Pinna’s experimental-phenomenological method of freely reporting how visual phenomena are perceived as displaying certain qualities and meanings.³⁴ Visual awareness, however, is not only a methodological presupposition, but generally describes the way we see the world when we are aware of the act of seeing. Koenderink argues that in visual awareness, our visual field not only consists of geometrically grouped elements, but is “quality and meaning through and through” [Koenderink et al. 2015b: 78]³⁵ To this extent, visual awareness happens prior to any cognitive involvement that could abstract from the directly perceived qualities and meanings, or unmask a percept as mere illusion,³⁶ or even establish an ontological gap between the percept (as not-self) and the perceiver (as self). It also happens before and independent of our physical knowledge about the world.³⁷ In being pure seeing without judgment and critical reflection, visual awareness also does not depend on an act of volition; it just happens to you.³⁸ “That is why awareness is most aptly described as presentation (*Vorstellung*), rather than as representation as the mainstream would have it. Because awareness cannot be controlled mentally, it is pre-personal, and pre- (or perhaps proto-)rational. It is more correct to say ‘there is awareness’ than to say ‘I have awareness’.” [Koenderink 2012b: 4] Furthermore, Koenderink defines Gestalts as the objects of visual awareness.³⁹ This implies that Gestalts are imperceptible if one does not sense their qualities and perceptual meanings as well. In accordance with Pinna, he determines the meaning of a Gestalt as a happening.⁴⁰ In particular, in the case of pictorial objects of a painting, but also in our everyday visual awareness, Gestalts “come with a past and a future [...]. Time appears as a context in which the objects are embedded. Although presentations are only the ‘moment now,’ they are apparently enveloped in time. This temporality is an important, even defining quality of every

³³Cf. Koenderink [2011; 2012b; 2012a; 2013; 2014; 2015a; 2015c; 2015d; 2015a] and Koenderink et al. [2015b; 2015b; 2016].

³⁴Cf. Koenderink [2015a: 53].

³⁵“The contents of awareness is characterized by quality and sense. Here I use ‘sense’ as in ‘good horse sense’. Sense is not ‘meaning’ as in thought, sense is different from meaning in the logical sense. Meaning is part of thought, and thought is something you do. Thought implies the self. Thought can be true of false, good or evil, and so forth, whereas awareness is beyond such dichotomies. It simply is.” [Koenderink 2012b: 4]

³⁶“Your awareness is your *reality* in the sense that it is simply given to you. Introspectively, a ‘corrected illusion’ in reflective thought is much ‘less real’ than the illusion in your immediate visual awareness. Thoughts may be right or wrong (your *rational mind* knows that), but awareness is *beyond* this or that, right or wrong (your *gut feelings* depend on that).” [Koenderink 2015d: 103]

³⁷Cf. Koenderink [2015d: 1047].

³⁸“The first thing to notice is that awareness *happens to you*. There is nothing you can do about it. Awareness comes like a sneeze. If you want to get rid of visual awareness of the scene in front of you, all you can do is close your eyes, or turn your head. Merely willing the awareness to go away has no effect.” [Koenderink 2012b: 3]

³⁹“I use *Gestalt* as synonymous with ‘object of visual awareness’. I could as well have focussed on the auditory or haptic modalities. Gestalts come in great variety. Their common nature is that they withdraw from analysis, that ‘nothing can be changed’. Phenomenologically they are created and annihilated instantaneously. Some are short-lived ‘glimpses’, others seem ‘immutable’.” [Koenderink 2015a: 131]

⁴⁰“Gestalts are not necessarily of a *static* nature, typically they are *happenings*. [...] Happenings account for the bulk of your experience.” [id.: 132]

pictorial object.” [Koenderink 2001: 302] It is in the course of this temporality of a meaningful happening in visual awareness in which the acts of ‘splitting and merging’ occur.

Let us first have a look at the underlying ontological hypothesis that conditions these acts. The hypothesis is called the ‘multiple-world hypothesis’ and it states that what we perceive as reality in our visual awareness is mostly and fundamentally ambiguous, even if we don’t notice it. There is not one definite and veridical way in which we perceive something correctly, as it ‘really’ is. This not only presupposes – following the tradition of Gestalt theory – that there is no constancy between stimulus and percept such that “sensation is a direct and definite function of the stimulus” [Koffka 1922: 534];⁴¹ in Koenderink’s [2001: 5] words, “it is entirely possible to have different perceptions in the face of the same optical structure (stimulus). This is due to the fact that perceptions invariably contain a considerable ‘beholder’s share’. The beholder’s share derives from the observer’s visual expertise and prior knowledge.” To this we can also add the observer’s physiological constitution, expectations, assumptions, emotions, sociocultural background, etc. We thus often perceive and interpret the same object, which does not have to be a material thing, in a contingent manner, as one of many equally possible and plausible Gestalts, depending on usually unreflected subjective reasons.

In addition to this refusal of the constancy hypothesis, Koenderink also claims that every alternative Gestalt that corresponds in its own way to a given set of stimuli is a possible world, i.e. a possible visual world in the case of visual Gestalts. It is as if, prior to any perception, we find ourselves arriving from a road that suddenly splits up into two or more equally possible continuations of which we have to choose one to continue in a way that makes the most sense to us. We thus make an often unnoticeable decision to see something *as* something and thereby we choose one possible world over others. Before this decision, “my percept was undefined (multiple visual worlds); after my decision, it became history, part of my mental makeup. The multiple worlds collapsed into a single one at the moment of the decision-in-action. The percept became operationally defined. In real life the decisions-in-action occur at moments that are *forced upon me by the world*; there is typically no looking back. It is *the flow of time*. [...] Decisions-in-action *happen* to you. The multiple visual worlds continually collapse. No doubt this is the reason why your percepts tend to be well defined most of the time.” [id.]

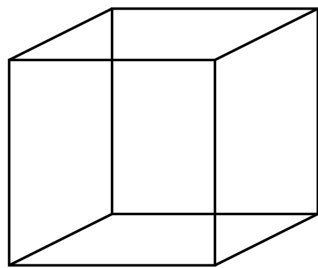


Figure 7-2: *Necker Cube*

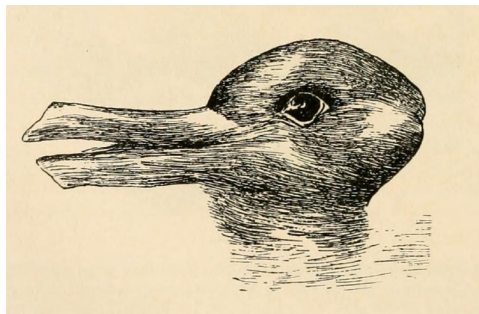


Figure 7-3: *Duck-Rabbit*

However, while most of the time our percepts indeed appear to be stable despite their underlying ambiguity⁴² and due to the needs and advantages of making immediate decisions, in some cases the ambiguity prevails in such a manner that every ‘decision-in-action’ leads us back to the

⁴¹This is the so-called ‘constancy-hypothesis’ that Gestalt theorists have refused; cf. subsection 6.3.1.

⁴²Cf. section 7.4 on ambiguity in perception.

state prior to the decision. This is particularly the case when we are not forced to make a decision, for example in the contemplation of artworks in which there is a broad scope of interpretability. Another striking example in which visual interpretations stand side-by-side instead of being reduced to only one are illusions of reversing figures, such as the well-known Necker cube (Figure 7-2⁴³). We have two options here of seeing this cube 3-dimensionally, and once we (mostly automatically) decide for one option, i.e. one ‘visual world’, the other one does not collapse, but is still retrievable. Here, as in the duck-rabbit illusion (Figure 7-3⁴⁴) and in all ‘pictorial worlds’ of artworks,⁴⁵ the fact that “you entertain multiple possibilities can be shown operationally when you let the picture develop over time in a movie-like fashion. There will be different degrees of surprise for various developments. You will buy many different movie shreds as ‘natural’, thus revealing the indefiniteness of the initial percept. The problem occurs in real life. It is not just fancy theory or mere philosophising.” [id.: 6–7] To this extent, visual awareness comprises the ability of sensing the internal ambiguity of an object, of perceiving and acknowledging the diversity of visual worlds and letting them ‘fluctuate’⁴⁶ instead of reducing this diversity by judging and deciding for one of them in order to proceed on our respective course of action. In becoming aware of this ambiguity, we become aware of the ontological fact that any “Gestalt can give way to something else at the drop of a hat. Literally! A snap of the fingers or a heartbeat might do the same. Any Gestalt is *mysterious* in the sense that one may never exhaust *what else* it might be [...]” [Koenderink 2015a: 134]

This means that often we (have to⁴⁷) take our time and employ our imagination during the state of visual awareness instead of accepting the first clear-cut viewpoint of a Gestalt as the definite and most appropriate one. Only on the second glance are we able to discover several sides of an object that are equally stable⁴⁸ and contribute to the object’s perceptible meanings by opening up more than one of the possible visual worlds in which it appears to us. In fact, Koenderink argues that this opening-up of a visual Gestalt’s parallel worlds happens thanks to a process called ‘microgenesis’⁴⁹, which is “a hypothetical subconscious process that continually comes up with visual presentations. It is a systolic process, a single systole taking less than a

⁴³Reproduced from Necker [1832: 336].

⁴⁴Reproduced from Jastrow [1899: 312].

⁴⁵Cf. Koenderink [2011].

⁴⁶“The duck-rabbit example is important in my arguments for two reasons. It shows that ‘pictorial worlds’ are *parallel worlds*, in the sense that only one instance is in immediate visual awareness, although this may vary from one presentation to another. On the ontic level where duck and rabbit live, they never meet. It also shows that awareness fluctuates between parallel worlds. Here the temporality is less important than the multifariousness.” [Koenderink 2013: 9]

⁴⁷According to Koenderink [2001: 3], often we recognize the ambiguity of a visual object only when we are explicitly confronted with this ambiguity such that we have to decide for one of several visual worlds: “I think that in a great many cases perceptions are more of the multiple-visual-worlds variety than like the single guess. You don’t notice this in the laboratory, because most psychophysical methods *force a unique response*. They simulate the decisions-in-action of daily life. That you don’t notice the essential ambiguity of perception in real life is likely due to the fact that you don’t need to take decisions on issues on which no actions would be taken anyway. That the multiple-visual-worlds option is indeed likely is suggested by the fact that a change of psychophysical method or task often leads to distinctly different results. This is not to say that observers actually entertain multiple-visual-worlds interpretations explicitly, but merely that they don’t necessarily resolve ambiguities when this is not specifically required for some action or decision.”

⁴⁸Cf. section 7.4 on the notion of ‘multistability’ in the context of perceptible figure-ground reversals.

⁴⁹In Koenderink [2011], he alternatively uses the term ‘iconogenesis’ and in Koenderink et al. [2015b], he prefers ‘psychogenesis’.

tenth of a second.” [Koenderink 2012b: 11] Thus the presentations of even one and the same object of visual awareness “follow each other at a rate of about a dozen a second. [...] Typically each one is similar to the immediately preceding one, though occasionally sudden changes occur.” [Koenderink 2015d: 1046] Such changes in the perception of a Gestalt can occur and be observed in visual awareness. Due to the rapidity of microgenesis’ systolic sequencing of visual presentations, however, a more stable object of visual awareness is normally a – still precognitive – fixation of a few single visual presentations. These fixations are called ‘glances’,⁵⁰ while a number of glances combined can result in a ‘good look’⁵¹ that already has a cognitive dimension and “may last from one to maybe a dozen of seconds.” [Koenderink 2012b: 12]. Furthermore, a few ‘good looks’ enables the disposition of ‘scrutiny’, which is a “mixture of cognitive integration and visual awareness.” [id.]

In my understanding, the conscious and unconscious acts of *splitting* a whole into its dependent parts or sub-wholes and *merging* dependent parts or sub-wholes into a more comprehensive whole can take place on all of these levels of precognitive and cognitive visual awareness. It is in these acts where “the mereological structure of a picture changes from presentation to presentation, even for a single observer.” [Koenderink 2013: 14] In so doing, additional visual worlds emerge in which novel perceptual meanings of a Gestalt become palpable, since “[v]irtually all of the Gestalts making up the mereological structure are ephemeral. The whole structure fluctuates as the systolic process of iconogenesis [i.e. microgenesis, M.S.] pumps out its presentations.” [Koenderink 2011: 316] Instead of drawing on simple figures of lines and dots which can easily be applied in laboratory experiments and exhaustively perceived in a couple of seconds, Koenderink prefers to use visual works of art to demonstrate, among others, the acts of splitting and merging.⁵²

Among the artistic examples he employs to illustrate how splitting and merging works in visual awareness as essential acts of any experimental phenomenology,⁵³ he refers to S. Dalí’s 1938 painting ‘Apparition of Face and Fruit Dish on a Beach’⁵⁴ Like most objects of visual awareness, this painting both consists of natural and artificial parts.⁵⁵ Whereas artificial parts correspond to the concept of a piece as an independent part and in so doing concern the material

⁵⁰Cf. Koenderink [2012b: 12]. In Koenderink et al. [2015b: 78], he states the following on ‘glances’: “Even in slightly complicated configurations one often notices sequences of different presentations. Each single glimpse yields a certain well defined visual awareness, but continued looking, even a good look of a few seconds, may well reveal a number of qualitatively different awarenesses. It is likely that psychogenesis [i.e. microgenesis, M.S.] comes up with numerous ways to account for the optical structure incident upon the retina, and that now this, now that hallucination ‘wins’, and determines the presentation in awareness.”

⁵¹Cf. id.

⁵²“In the case of paintings any single presentation only yields part of an articulated (the process never really ends) nexus of Gestalts. This is somewhat different from the conventional examples presented in the literature of experimental psychology. Such examples have such a limited complexity that they can often be exhausted in just a few, or even a single, presentation, certainly in a specious present. Most paintings are far too highly structured for that. The casual visitor of a museum may grant a painting only a cursory glance, but the connoisseur knows it takes time, often an appreciable amount, to get to know a work. Moreover, the best paintings appear to be inexhaustible, and reward repeated viewing.” [Koenderink 2011: 317]

⁵³Cf. id. [16].

⁵⁴Oil on canvas, 114.8 cm × 143.8 cm, Wadsworth Atheneum, Hartford, Connecticut. For copyright reasons, I cannot reproduce this painting here, but have to refer to https://en.wikipedia.org/wiki/Apparition_of_Face_and_Fruit_Dish_on_a_Beach (last visited on 7 December 2019) instead.

⁵⁵Cf. id. [14].

composition of the artwork, natural parts are the discernible yet inseparable semantic contents. A splitting of the painting into artificial parts would mean, for example, cutting it into pieces in order to produce a jigsaw puzzle. The arbitrariness of the shape and number of such pieces is contrasted with the intrinsic order and visually meaningful relations the natural parts display. Many of the natural parts of Dalí's painting catch our eye at first glance, while some demand a closer look to be detected. One of the first natural parts we may become aware of is the face in the middle of the painting. But not only is it impossible to separate this face from the painting due to its missing borders with the surrounding elements (which shows that artificial parts and natural parts do not have to be identical), but also, on closer inspection the observer might discover that the face actually is a whole in the sense of a merging of other natural parts: the hairs are pears, the forehead is sand, the merger of the forehead and the nose is a goblet, the right eye is a vase, the left eye is a hardly recognizable lying object (maybe a sleeping or dead human?), and the chin could be a large shell. In looking at and interpreting this face, we in fact constantly merge its constituent parts into a more comprehensive whole and we split the whole into natural parts. There are multiple worlds, multiple possibilities and multiple perceptual stabilities involving the face, its natural parts and the regions external to the face, since every element in the painting can be more or less meaningfully related to it. The creation of visual meaning presupposes this bi-directional process, in other words: this *oscillation* of splitting and merging.

The same is true for all of the other objects of visual awareness in this artwork as well: "Keep looking for a while. The semantic transitions you are likely to experience are remarkable. Since it was painted by a man, the contents are only finite. Yet, you may feel uncertain to have exhausted the contents, even after a considerable period of scrutiny." [Koenderink 2013: 17] In order to conceive visual meanings, every possible viewpoint involves acts of splitting and merging. Furthermore, every natural part that is split off and every whole that is a merger entails, according to Koenderink, its own visual world that exists parallel to the other visual worlds of the artwork and – once detected – always remains retrievable due to the multistability of perception. "Prolonged viewing will suggest different part-whole relations. They do not necessarily start from nameable parts, often 'recognition' occurs *after* the Gestalt formation. The splits and merges largely occur on a level just above the rockbottom marks. Yet they lead to transitions from one parallel world to another at the highest level. 'Wholes' and 'parts' interact." [id.: 16] Although the highly surreal and dreamlike content of Dalí's painting may suggest otherwise, in our everyday perception of the world(s) around us we also incessantly split and merge, i.e. 'zoom in' and 'zoom out',⁵⁶ of what is empirically presented and present to us. This can happen consciously, e.g. when we are looking for a book on a cramped bookshelf or for a person in a crowd of people, or unconsciously, e.g. when we drive a car and we merge the street, the traffic and the signs into one single whole or when we split the street at a crossroad and take one direction and thus decide for one possible (not only visual) world. One of the unique features of Dalí's painting, however, is to expatiate upon this continuous process and to imbue it with a plenitude of concentrated visual meanings in the framework of artistic brilliance.

⁵⁶Cf. Koenderink [2011: 318].

7.2.2 Complicacies in Pinpointing the Acts of Splitting and Merging

Whereas the perception and interpretation of artworks and thus empirical aesthetics in the broadest sense may serve as eligible illustrations of splitting and merging, it is problematic to explain such acts by means of traditional approaches. At least in my own reading of Koenderink's rather brief reflections on this topic, he argues that neither the distinction between figure and ground that is so prominent even in contemporary Gestalt theory, nor classical extensional mereology, nor any theory that strives for an exact determination of the number and nature of atomic parts and/or a not further mergeable whole in a particular object of perception can do justice to the phenomenon of splitting and merging. Firstly, the figure-ground distinction, about which I will provide more information in section 7.4 below, is ill-suited because it denies any object-status to what is considered as ground. Compared to a figure, the ground on which it appears has – according to Rubin – no form,⁵⁷ no poignancy [*Eindringlichkeit*]⁵⁸ and almost no visual meaning,⁵⁹ which is why it therefore leaves us aesthetically indifferent.⁶⁰ It is true that if we split off a natural part (np_1) from the surrounding ones ($np_{2...n}$) in order to 'zoom in' on it to derive meaning out of its singularity, then $np_{2...n}$ and the merges np_1 may have formed with $np_{2...n}$ are faded out. In contrast to the classical definition of a ground, however, what is faded out still remains an object of visual awareness and is potentially retrievable – presuming the hypothesis of 'microgenesis' – in the next deciseconds.⁶¹ Beyond Koenderink's own scarce yet insightful reflections on this subject matter, we could even say that there is and has to be a productive tension between what is present and what is latent in order to generate visual meaning and to account for the creative nature of the visual system.⁶² The same problem for the application of the figure-ground structure holds true, as we have seen, for conceptual metonymy, in which the source domain, which can be either part or whole, remains a latent target since the mapping from source to target is, by definition, reversible.⁶³ This is why I think that there are important structural similarities between conceptual metonymy and two-sided part-whole dependence, in particular as instantiated by the acts of perceptual splitting and merging, such that the latter may serve as the experiential domain for the development of the former and its expression in ordinary language.

Secondly, the co-activation of source and target, i.e. of remainder and what is split off/merged, prevents the sufficiency of a simple mereological definition of "*proper parthood* of an object with respect to a whole such that the whole should at least contain another part, not overlapping, with the object to split off. Thus any 'proper part' is 'supplemented' by another, *disjoint* part. That other part then is the 'remainder'. Most people would agree to add this to the axioms of ground mereology, promoting it to *minimal mereology*." [id.: 16] While this approach of

⁵⁷Cf. Rubin [1921: 36].

⁵⁸Cf. id. [67].

⁵⁹Cf. id. [74].

⁶⁰Cf. id. [77].

⁶¹"Splitting an object intuitively yields two additional objects, namely the object that was 'split off', and a 'remainder'. Of course, there are numerous problems with such an idea. For instance, can you be certain that a 'remainder' exists? The 'ground' in a figure-ground split is not an object. [...] The intuition is that splitting an object only makes sense if there is a remainder. But then, the figure-ground split doesn't split an object, because the remainder (the background) is not a proper object of visual awareness." [Koenderink 2013: 16]

⁶²Cf. Koenderink et al. [2015b: 78].

⁶³Cf. subsection 5.3.2. and the determination $PWO_{ind_lang_2}$.

classical extensional mereology would indeed work for wholes that are decomposable into material pieces due to the disjointedness and artificial decomposability of the latter,⁶⁴ a work of art like Dalí's painting demonstrates that there are overlapping yet distinguishable strata of meaning in which one and the same natural part can be involved. For example, if we split off and concentrate on one natural part, let's say the right eye of the face in the center, such that the object of our visual awareness turns into a vase (target) and leaves behind its role of being a right eye (source), then the remainder (the face) still includes the right eye. Although the observer now sees and interprets the natural part in question as a vase, they still see or at least know it to be a right eye as well. Thus, by partaking in several pictorial worlds, one and the same natural part can be part of itself, because it can be included in its own remainder, which contradicts the mereological axiom of proper parthood in the sense of disjointedness ($x < y$ if x is a part of a whole y and $x \neq y$).

Then there is, thirdly, a set of issues that makes the acts of splitting and merging incompatible with any theory postulating either the existence of atomic, i.e. indivisible parts that would delimit the act of splitting, and/or the existence of an absolute whole that is not further mergeable into a more comprehensive whole. Concerning the micro-level of atomic parts, Koenderink asks, "Is there an end to splitting? Are there rockbottom 'atomic' objects?" [id.: 16] Instead of denying the existence of atomic parts in principle, however, he reacts to this question by making a rough distinction between what could be called the 'technical' parts of a visual object and its 'density'. The technical parts, on the one hand, are identifiable on the atomic scale with the visible strokes of the brush,⁶⁵ with continuous planes of color,⁶⁶ or the array of pixels of digital artworks.⁶⁷ In a technical sense, such atomic parts have to be understood as the basic entities of a visual object. In our visual awareness, on the other hand, such atomic parts only play a minor role. "In painting, the individual touches might be considered atomic, at least if they were intended to be visually apparent. An alternative would be to say that there are no atoms, but a [...] *density*, 'density' implying that any part has a proper part. This implies a continuum of parts. The structure defined by the regular open sets of the Euclidean plane with set inclusion as parthood relation is the model. One has a choice here, the blue sky [in Margritte's *Le Seize Septembre*, M.S.] as an atom fits the description of distribution of pigments accurately, but the density interpretation appears to capture the affective tone of a 'deep' blue sky." [id.: 17–8]. The notion of density implies that the act of splitting is theoretically endless, that every further split cuts deeper into the density of the visual object, but only up to the point where the continuation of this act becomes devoid of meaning, because sooner or later it will become impossible to detect any visual meaning the Gestalt may display. Splitting without simultaneous merging ultimately leads to pointlessness – and vice versa. This is not only the case for visual art, of course, but more generally for everyday empirical perception: As long as there is at least a felt potentiality of perceptual meaning, the act of splitting itself makes sense and can be continued in order to analyze parts that seem to be natural units to the observer.

Likewise regarding the macro-scale in merging, we can ask in a similar fashion: "How many

⁶⁴Cf. section 3.1.

⁶⁵Here we can think of impressionist and pointillist paintings.

⁶⁶As examples, Koenderink [id.: 17] refers to K. Malevich's *Black Square* (1915) and the blue sky in R. Margritte's *Le Seize Septembre* (1956).

⁶⁷Here Koenderink uses the example of the face of R. Lichtenstein's *Girl in mirror* (1964), but we can also think of animated digital art such as films or video games.

objects will you arrive at when you continue the process indiscriminately? Is there an end to merging, a ‘universe’ that contains everything? In the visual arts that would be the ‘gist’, but is it unique?” [id.: 16] Similarly to the opposite direction of splitting, Koenderink demonstrates that in the act of merging there is a difference between a technical and a phenomenological sense. Technically, we can indeed merge two or more natural parts to arrive at a merge that is clearly separated from its background and that absorbs its parts in such a way that no further merges (and splits) are possible. “In the simplest case one might do a ‘blur’ and ‘posterize’ to force a ‘sum’, but the ‘eye measure sum’ is different.” [id.] Whereas Koenderink shows this on the basis of P. del Vaga’s painting *Madonna col Bambino* (ca. 1535) and by using *Adobe Photoshop*⁶⁸, we can receive the same results by applying this technical approach to a desaturated cutout of Dalí’s painting in which the elements of the face are blurred, merged and thereby segmented “based upon the raw pixel values” [id. 16] If we only look at this artificially highlighted figure and define it as the complete visual domain at hand, then indeed we have arrived at a visual object for which further acts of splitting and merging would be futile. What is visible instead is a fusion of now indistinguishable parts that almost – were it not for the open borders of the jaw that makes us amodally complete the Gestalt of the face even in the modified version – appears like a ‘monad’ without relations to the indecipherable world around it. While the face (the whole) is still visible, both its own parts and the surrounding parts with which it could merge have become indistinguishable and therefore not further relatable to the merger that is the face. As a result, no more split or merged elements can emerge. With the measure of our eyes and the visual interpretations that go along with it, however, such a technical and absolute merge is not only unascertainable, but would also be fruitless, because it would put an end to the creative meaning-generating fluctuation of splitting a visual object into parts and merging it into (sub-)wholes in order to let us move along and exceed the thresholds of parallel visual worlds. Any unanalyzable minimum on the micro-level or any unsynthesizable maximum on the macro-level would perhaps constitute a hierarchic taxonomy of parts and whole, but such a static and determined taxonomy in a technical perspective is foreign to the processes inherent to our visual awareness. Indeed, a perceptual world “is like a taxonomic tree, but it is a *dynamic* taxonomy. Wholes are not determined, but exist as potential sources of parts. Parts are not determined either, they only have a floating existence. The whole may change and make the part irrelevant, or a part may take on the role of a whole.” [id.: 23] Any theory that postulates absolute limits downwards or upwards and in so doing (pre)determines the part-whole taxonomy is therefore insufficient to describe the phenomenon of splitting and merging. The question remains, however, of what a positive theory might look like, how it can be empirically justified given the high subjectivity involved in the acts just delineated, and which ontological commitments it has to make given the sheer infinite proliferation of entities that come into being in the course of such acts.

If we now turn, with this last question in the back of our minds, to a brief evaluation of Koenderink’s ideas on splitting and merging for the present purpose of determining the ontological nature of PWO, then an ambivalent conclusion has to be given. On the one hand, the ontological nature of splitting and merging a Gestalt perfectly accounts for the two-sided dependency of parts and wholes that the notion of PWO implies from the outset. Splitting and merging, i.e. ‘zooming-in’ and ‘zooming-out’, is a bidirectional movement through which

⁶⁸Cf. id. [16].

a whole only receives perceptual meaning via an awareness of its natural, dependent parts and vice versa in a fluctuating and often creative way. The method of experimental phenomenology and in particular the use of artworks, e.g. Dali's 'Apparition of Face and Fruit Dish on a Beach', as objects of visual awareness on which these acts can be studied shows that if we want to understand reality as structured in dynamic relations of parts and wholes, then we are well advised to adopt splitting and merging into the determination of PWO's ontological nature and therefore include it in its definition.

On the other hand, Koenderink – standing in the tradition of Gestalt theory's critical realism⁶⁹ – repeatedly emphasizes that splitting and merging are nothing but subjective acts such that the perceptual meanings and multiple visual worlds involved in these acts only exist in our minds. "Sense, nor quality are in nature, they are in the mind. You can't 'pick up' sense and quality, you have to supply it!" [Koenderink 2012b: 12] It is impossible that or at least unknowable whether reality itself, be it physical reality or any other aspect of it that might exist either independent of our mind or interdependent with it, possesses this dynamic and reversible taxonomy of parts and wholes that is essential to splitting and merging. Rather than the possibility that *because* the ontological nature of reality *enables* such a taxonomy and our perception of it to make splitting and merging possible at all, Koenderink sees it the other way round: Only *because of* such acts of our visual awareness are we able to interpret the phenomenal side of reality as consisting of, among others, interdependent part-whole relations. Koenderink suggests a Kantian stance in this regard: "If you really must, then adopt Kant's notion of the 'Ding an sich': you will forever be unable to reach the 'real' thing! It seems more practical to adopt the attitude that reality is what you experience. Of course, the experience reflects the way you are, just as it reflects the way the 'world' is. But this makes sense, simply consider the way a traffic sign pole is to you, your dog, or a pigeon. Who has it right? Why?" [id.: 7].

To me it seems, however, that a *reflection* of how the world is means here just another, perhaps more euphemistic word for a more or less corresponding mental *representation* of it. This, however, contradicts the insistence that the object of visual awareness is supposed to be a precognitive, direct *presentation* rather than a mediated *representation*.⁷⁰ The representative character of perceptual objects is even enforced by Koenderink's affirmation of D. Hoffmann's metaphor for the perceptual system as a 'user interface'⁷¹ through which every mind accesses the world outside of it in an evolutionary practical and ideally non-veridical manner. Like the icons on a virtual desktop, the perceptual object in front of us "is like the Gestalt, quality, or meaning, in your visual awareness. Although the elements of your visual awareness are not physical objects, they are indeed your reality. But they are *your* reality, and nothing

⁶⁹Cf. Bischof [1966: 27–30], Hüppe [1984: 2] and for an elaborated system of several 'levels of reality' Metzger [2001].

⁷⁰Cf. Koenderink 2012b: 4.

⁷¹A recent explication of this metaphor by Hoffmann [2016: 158] reads as follows: "The perceptual systems with which we have been endowed by natural selection are a species-specific interface that allows us to interact adaptively and successfully with objective reality, while remaining blissfully ignorant of the complexity of that objective reality. Space-time is the desktop of our perceptual interface, and physical objects are icons on that desktop. To ask whether the red color and round shape that I perceive of an apple on the table are the veridical color and shape of something in objective reality is the same category mistake as asking if the red color and rectangular shape of the icon for the PowerPoint presentation are the veridical color and shape of something in the computer."

beyond that.” [Koenderink 2015d: 1058] In the spirit of Kant, such a user interface is a priori determined and difficult, if not impossible, to modify due to the biological state into which our brain has developed in the course of evolution.⁷²

Despite this dominant subjectivism that would even open the door to a complete idealism, were it not for the assumption that the process of microgenesis constantly conducts ‘reality-checks’ in order to recognize and avoid hallucinations,⁷³ Koenderink allows for a certain amount of intersubjectivity that then becomes a ‘shared objectivity’ over time.⁷⁴ However, for a sufficient and comprehensive determination of the ontological status of PWO along the lines of – among other things – the parameter *reality*, a complete reduction of meaningful Gestalts with two-sided dependency of parts and whole to the perceptual system is insufficient. Due to the undeniability of our embodied being-in-the-world,⁷⁵ we cannot and should not assume a strict ontological gap between subject/perception and world/reality. As the world exists and has existed prior to the evolution of mind and brain,⁷⁶ processes of the latter must be somehow detectable in the ontological structure of the former – or, at least, this possibility should not be ruled out by merely taking for granted that qualities and meanings and the processes which lead to them only exist in the mind and/or brain. So maybe the acts of splitting and merging are only the (inter-)subjective ramification of the more reality-based and therefore general process of what I call, for lack of a better term, PWO? This less ‘critical’ yet more ‘realist’ perspective should at least be taken into consideration⁷⁷, which is why as a next step in the determination of PWO’s ontological nature, we have to look at it as a dynamic process that might have its origins not in psychological reality, but in emergent processes already detectable in physical reality. Nonetheless, with Koenderink’s observations on ‘splitting’ and ‘merging’ as belonging to our ‘visual awareness’, it is now possible to formulate the second determination of PWO’s ontological nature in the realm of empirical perception:

PWO_{ind_emp_2}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole become perceptually meaningful through mutual interaction that is instantiated by the acts of splitting a whole into parts and merging parts into a whole.

7.3 Part-Whole Emergence

Additional to perceptual meaning as happening (Pinna) and the acts of splitting-merging (Koenderink), there is a further notion that is integrable into the ontological determination of two-sided part-whole dependency: the concept of emergence. Unlike the previous two aspects, however, emergence has been consequential for Gestalt theory since its very beginnings, because the coming into existence of a Gestalt is unthinkable without any weaker or stronger

⁷²Cf. Koenderink [2015d: 1060].

⁷³“Psychogenesis [i.e. microgenesis, M.S.] starts as a mere ‘hallucination’, and gains existential power when it completes ‘reality checks’ in the visual front end.” [Koenderink et al. 2015b: 72]

⁷⁴Cf. Koenderink [2015a: 46].

⁷⁵Cf. subsection 4.1.2.

⁷⁶Cf. the first chapter in Meillassoux [2008] on this argument of ‘ancestrality’.

⁷⁷For such a perspective, cf. the insightful discussion of formal-ontological divisions of sets and conglomerations in the context of realities structured in different levels in Asenjo [?].

postulation of creativity and novelty. Moreover, whereas Pinna and Koenderink explicitly understand perceptual meanings as belonging to the cognitive side of the perceiving subject,⁷⁸ which is in line with current neurological research, the concept of emergence allows for a more universal perspective on reality and part-whole structures. This is because emergence is not only researched on in empirical perception and Gestalt theory, but is also related to processes e.g. in physics, biology, chemistry, sociology, theology or just ordinary language.⁷⁹ Emergence is thus, prior to its respective applications and definitions, an ontologically neutral concept with which one can describe or perhaps even explain the coming into existence of novel features and entities in various ontological regions studied by various scientific disciplines.

A sufficient definition of emergent properties can hence simply refer, without any further ontological commitments and specifications, to ‘self-organizing processes’ in general: “Self-organizing processes may give rise to new, unexpected properties and behaviors in living systems, also called *emergent properties*. Emergent properties can be defined as properties that are possessed by a dynamical system as a whole but not by its constituent parts. To put it another way, emergent phenomena are phenomena that are expressed at higher levels of organization in the system but not at the lower levels.” [Boi 2017: 182] If we were to succeed in relating emergence in some way to part-whole interdependency without reducing it completely to cognitive processes but by leaving it on the more comprehensive level of a ‘self-organizing system’, then it would be possible to determine the ontological nature of PWO as a more reality-based and universal process. This, in turn, would facilitate the integration of PWO into a theoretical framework that is concerned with the fundamental and experienceable nature of reality itself and not only of reality-perceiving subjects. Furthermore, an elucidation of the concept of emergence would also improve the understanding of perceptual meaning itself, since both Pinna and Koenderink describe perceptual meaning as being somehow emergent,⁸⁰ without, however, providing or referring to a concrete theory of what emergence entails in their view.

In recent years, there has been an increasing amount of interdisciplinary literature on the concept of emergence. In other words, we are witnessing a “re-emergence of emergence theories in contemporary thought.” [Clayton 2006: 27] Similarly to the philosophical reflections on Gestalt theory, the overarching question in this literature is whether a whole is simply a summative aggregate of its parts, or something additional to and caused by its parts yet reducible to them, or something that might be caused by its parts but in turn influences and sustains its parts in such a way that it is irreducible to them. Parts are then usually understood as atomic physical entities with inherent properties, over and above which non-physical entities

⁷⁸Pinna et al. [2009: 228]: “One of the uniquenesses of the human brain is the perceptual capability to perceive complex meanings through very simple and abstract elements. This capability depends on a spontaneous organizing tendency of the human brain that creates orders and meanings at many perceptual levels.” As to Koenderink, cf. the previous two paragraphs. This viewpoint is in line with current neurological research on Gestalt formation, for example with the fMRI study of Kubilius et al. [2011] that comes to the conclusion that “superadditive global shapes emerge at higher-level visual areas” [id.: 1301] in the brain.

⁷⁹Cf. Goetz [1964] and Robinson [2009: 528] for an overview.

⁸⁰“The perceived meanings are not present in any of the individual subcomponents taken alone, but emerge from component interactions [...]” Pinna [2010: 71] Although Koenderink is less explicit about this topic, he states that “[t]here are no meanings (in the sense of ‘sense’) or qualities (like the ‘redness’ of a rose) in physics [...]. The whole idea that visual awareness might ‘represent’ something like a description in terms of physics is nonsensical. Visual awareness is presentation, presentations are visual reality.” [Koenderink 2012b: 6] This statement comes very close to the general conviction of emergentists that not all properties and entities are ultimately reducible to a supposedly physical world of smallest particles.

or properties with causal powers on their foundation might or might not emerge. Thus contrary to reductionist theories that defend one or another form of what Kim calls ‘mereological supervenience’,⁸¹ “[e]mergence theories presuppose that the once-popular project of complete explanatory reduction – that is, explaining all phenomena in the natural world in terms of the objects and laws of physics – is finally impossible.” [id.: 1]

There can be all kinds of emergent phenomena: consciousness, concepts, the soul, social groups, tertiary qualities and qualia, religious symbols, moral values, artistic qualities, biological symbioses and chemical reactions, perceptual Gestalts – to name just a few candidates.⁸² Although the respective discussions of emergence are often highly specialized and formalized, a more general review of this literature reveals three central and recurrent themes that are also relevant for a more specific take on emergence in the context of Gestalt theory: (1) the distinction between epistemological and ontological emergence, (2) the supposition of a hierarchy of levels that usually goes along with an approval of ontological emergence, and (3) the presumption of ‘downward causation’ that equally presupposes the existence of emergence qualities or entities. Let me sketch each of these themes before suggesting a more specific theory on emergence that could be useful for an understanding of perceptually meaningful Gestalts in terms of part-whole interdependency.

7.3.1 Ontological Emergence, Hierarchies and Downward Causation

(1) Probably the major distinction in the recent literature on emergence is the one between epistemological and ontological emergence. The former is also called ‘weak’ and the latter ‘strong’ emergence. This distinction comprises the one between reductionism and emergentism, since even a reductionist, for whom all hypothetically emergent wholes are ultimately reducible to physical parts, might accept a version of epistemological emergence without contradiction, while a genuine emergentist would only embrace ontological emergence. This is because the stance of epistemological emergence indicates, according to Silberstein et al. [1999: 186], that a “property of an object or system is epistemologically emergent if the property is reducible to or determined by the intrinsic properties of the ultimate constituents of the object or system, while at the same time it is very difficult for us to explain, predict or derive the property on the basis of the ultimate constituents. Epistemologically emergent properties are novel only at a level of description.” Saying that ‘my laptop is broken’, for example, would be just a more practical way of communicating a certain problem for which the real physical cause (maybe the screen, maybe the hard disk) is either unknown or too specific to explain in the given context. This does not change the fact that the material laptop is nothing above and beyond an (ideally functioning) aggregate of its physical parts. Describing this aggregate as ‘broken’ is only an epistemologically, i.e. not *real* emergent property. The benefits of embracing a view of weak emergence are, among others, that it is “metaphysically innocent, consistent with materialism, and scientifically useful [...]” [Bedau 1997: 376] This means that no ontological commitments to suprasummative entities have to be made, that we do not have to go beyond the sphere and

⁸¹“A case in point is mereological supervenience, the doctrine that the macro-properties of material things are supervenient on their micro-properties. It is this metaphysical doctrine of atomism that seems to underlie and support the enormously productive research strategy of micro-reduction in modern theoretical science.” [Kim 1993: 77]

⁸²Cf. Paoletti et al. [2017: 9] for a more detailed list of possible emergent phenomena.

the laws of the material and measurable world, and that the results of the interplay of parts (for example the functionality of the laptop) is predictable and therefore analyzable.

Ontologically emergent properties, on the other hand, “are neither reducible to nor determined by more basic features. Ontologically emergent features are features of systems or wholes that possess causal capacities not reducible to any of the intrinsic causal capacities of the parts nor to any of the (reducible) relations between the parts. It should be noted that epiphenomenal features do not meet the definition of ontological emergence.” [id.] With ‘epiphenomenal feature’, Silberstein et al. are referring to what is also classified as ‘resultant properties’. A resultant property is the property of an aggregate that depends on a specific arrangement of its parts and that ceases to exist as soon as the arrangement undergoes changes. To illustrate what is meant by this, Heil [2017: 45] uses the example of a tomato: “A tomato has the power to roll owing to its spherical shape. The tomato’s parts, however, need not be spherical, need not themselves have the power to roll. Yet it does not seem that the tomato’s shape is, in any interesting sense, an ontologically emergent property. The shape is just what you get when you put the tomato’s parts together in a particular way.”⁸³ To claim that *all* emergent properties are ultimately merely epiphenomenal or resultant and thus both predictable and reducible to the parts with their arrangements and interactions, although for the sake of practical description it makes sense to act *as if* such properties did exist, characterizes the position of an epistemological emergentist in the most general way. A rather strong and ontological view of emergence, however, “has the merit of preserving commonsense intuitions and corresponding to our everyday experience as agents in the world.” [Clayton 2006: 27] Related to Gestalt theory, we could say that if we were to only consider his insistence on the ontological priority and analyzability of stimulus parts and his hypothesis that we might encounter indivisible atomic parts all the way down, Ehrenfels’ position could be paralleled with epistemological emergentism. The ontological foundation of the Berlin school, on the other hand, would be more compatible with ontological emergentism, since in order for an emergent whole to determine its parts, even if it is taken to be caused by them, the whole has to possess a certain degree of independent reality.⁸⁴

(2) The acceptance of ontological emergence necessitates a hierarchical model in which what is emergent stands on a different vertical level than that from which it has emerged. In other words: “To say that emergent properties are irreducible to lower-level phenomena presupposes that reality is divided into a number of distinct levels or orders. [...] It follows that one of the major issues for emergence theory will involve the question when exactly one should speak of the emergence of a new level within the natural order.” [Clayton 2006: 3] Unlike the neo-platonic model of a ‘great chain of being’⁸⁵ in which the many emanate from the One in a top-down direction, however, contemporary emergentists, while keeping the many (i.e. the parts) at the

⁸³The more specific discourse of Gestalt theory distinguishes in this regard ‘global’ from ‘holistic’ properties. The former are predictable properties of part agglomerations that are larger in physical size than the single parts, whereas “[h]olistic properties are relational properties that arise from the interrelations among the component properties of the stimulus.” [Wagemans e.a. 2012b: 9]. Cf. on this distinction also Kimchi [2015].

⁸⁴Cf. Stadler et al. [1994] on how and to what extent Gestalt theory, in particular Köhler’s hypothesis of psychophysical isomorphism, can be seen as a forerunner to emergentist theories of self-organization and synergetics.

⁸⁵Cf. on the history of this idea Lovejoy [2001].

bottom and the ‘ones’ (their unifications, their wholes) on higher levels, turn the direction upside down. Here it is not the many that emanate from the One, but the wholes emerge from the parts, and only in a subsequent step can a whole exert causal power (‘downward causation’) on its parts.⁸⁶ There is thus not one single source on the top of the hierarchy, but a multiplicity of sources at the bottom of it.

Within this framework, one of the numerous issues that emergentists have to take into consideration when postulating an emergent part-whole hierarchy of reality is how to avoid a parallel ordering of levels. In their article ‘Explaining Emergence: Towards an Ontology of Levels’, Emmech et al. [1997: 93] point out the danger of such a view: “One should avoid a parallelistic interpretation saying that one level is created out of another, and that it exists in parallel to the first level, as two separate levels without any further interaction. To exaggerate a little: if the *parallel* existence was true, as a human being you would not be one but several different entities on several different levels. Your physical body, your biological body and your psyche etc. – and it would seem rather miraculous that it always happened to be focused at the same point in space.” Instead of conceptualizing levels in a parallel fashion, like a pyramid with accumulative horizontal layers, the authors suggest an *inclusive* model, perhaps imaginable as an onion-skin model, in which the higher levels (a) contain the lower levels, (b) cannot be deduced from the lower levels, (c) are conditioned by and thus supervene on the lower levels, (c) cannot change the fundamental laws of the lower levels, and (e) have no less ontological priority than the lower levels.⁸⁷ The last point is important to specify. It says that the “higher levels are as ontologically pre-eminent as the lower ones, even if being presupposed by them, that is, they are defined by properties by special cases of the lower levels. In this respect, levels are ontologically parallel, but non-parallel in so far as they coexist.” [id.: 96] Although Emmech et al. do not mention it, such a more comprehensive and ‘spherical’ model of multiple layers would also do more justice to the increasing amount of experienceable *holism* that is attributable to higher levels.

Furthermore, and interestingly for the present context, the authors add that the “most non-parallel view of levels imaginable is what we will call the *Gestalt view*. The higher level manifests itself as a pattern or as special arrangement of entities of the lower. If you imagine yourself existing on the lower level you would hence not be able to realize or grasp the pattern which is only possible to conceive of at a higher level.” [id.: 96–7] Since emergent part-whole levels are a structure generally attributed to (regions of) reality itself instead of the perceiving subject, Emmech et al. refer to the more ontological stance of higher-order Gestalt qualities in Ehrenfels’ and Köhler’s attribution of self-organizing wholes in physical systems to “underline that the gestalt view need not by any means entail subjectivism and all its scepticist consequences: “[...] the notion of a Gestalt need not demand a constituting subject, at least not an empirical subject.” [id.: 97] Whether or not a realist reading of Ehrenfels and an emergentist reading

⁸⁶Cf. Clayton [2006: 4–7] on this different conception of part-whole hierarchy and other forerunners of current emergent theories.

⁸⁷“That levels are inclusive means that a higher level does not violate lower level laws, that the higher level is materially related to the lower one, and that this does not imply that the organizing principle of the higher level can be deduced from lower level laws. The organizing principles are, as the entities belonging to various levels, ontologically existing. It is not just epistemologically a level theory (saying that ontologically all entities belong to the lower level), but also ontological.” [Emmech et al. 1997: 105]

of Köhler is fully justifiable⁸⁸ is less important here than the problem that we face when we apply the idea of comprehensive levels of emergent properties to the way perceptual meaning is taken to emerge in Gestalts. On the face of it, it might seem as if the strong emergentist framework of more comprehensive wholes emerging out of less comprehensive parts would be perfectly compatible with a Gestaltist take on emergence. Probably the simplest example for the emergence of holistic properties in contemporary Gestalt research can be found in Pomerantz et al. [2011: 1336] and Wagemans et al. [2012b: 5], who argue that when we draw one black dot on a white sheet of paper, this element only has the property of *position/location*. If we draw a second dot next to it, we get a sum of two individual locations, but also the two suprasummative emergent properties of *proximity/distance* and *orientation/angle*. From the addition of a third dot the properties *(non)linearity* and *(a)symmetry* emerge, and “adding a fourth dot leaves us with all the individual, pairwise and triplet-wise features but adds one EF [emergent feature, M.S.] candidate unique to configurations of four dots: *surroundedness*, whereby one dot falls fully within the interior or fully in the exterior of the triangular convex hull defined by the first three dots [...]” [Pomerantz 2011: 1337] This simple yet representative example shows that in the conventional Gestaltist view, we proceed from parts on a lower level and yield more embracing wholes on higher levels, which have properties the parts do not have in isolation or summation.⁸⁹

However, when we take into consideration the emergence of perceptual meaning as it is developed by Pinna and advanced as splitting and merging by Koenderink, then we face the problem that differentiation into parts occurs on a level higher than grouping into wholes. Although we start out with individual stimuli and combine them into a Gestalt whole with emergent properties on a higher level, it is due to a *happening* to this whole that we have to proceed to (some of) the whole’s parts on a yet higher level to figure out *what has happened* to it. Only in so doing is it possible to arrive at a perceptual meaning at an even higher level of complexity, which embraces both the ideal grouped whole (*amodal wholeness*) and its contingent differentiation (*modal partialness*).⁹⁰ In other words, and as already described in section 7.1, while in Pinna’s framework a first perceptual step, after the segregation of stimuli as figure from a ground, consists in grouping and shaping these stimuli into a lawful and homogeneous

⁸⁸At least in ‘On Gestalt Qualities’, Ehrenfels attributes ontological priority and mind-independence only to the lower levels of stimuli. His views indeed become more realistic, but also more speculative and less empirically justifiable, however, in his metaphysical and theological *Kosmogonie* from 1916 (cf. id. [1990]), in which he “elevated Gestalt into a cosmic principle of psychic or spiritual order that was mankind’s only defense against chaos, entropy, and racial degeneration.” [Harrington 1996: 109] Köhler, in his 1920 *Die physischen Gestalten*, reduces perceived Gestalts to processes in the brain that are isomorphic with physical processes in nature instead of classifying them as emergent and thus as supra-physical.

⁸⁹Cf. on the internal hierarchy of perceived Gestalts with a generalization to other perceptible entities also Metzger [2001: 193]: “Jedes seelische Gebilde, jedes Ding, jeder Vorgang, jedes Erlebnis im engeren Sinn, bis hinunter zu den einfachsten Wahrnehmungsgestalten, weist eine bestimmte Gewichtsverteilung und Zentrierung auf; unter seinen Teilen, Stellen, Erstreckungen, Eigenschaften besteht eine *Rangordnung*, unter Umständen ein *Ableitungsverhältnis*. [...] Diese sind nicht erst in es hinein verlegt (projiziert, eingefühlt), sondern gehören *zu seinem Wesen*. Es gibt eine natürliche Zentrierung und Gewichtsverteilung, für die zum Teil schon bestimmte Gestaltgesetze bekannt sind.”

⁹⁰“The perceptual meanings cannot be reduced only to the question of grouped and ungrouped components but represent the creation of a further level of complexity, where ungrouped objects become parts of a more holistic organization that takes into account similarities and differences of the previous level of organization and where similarities and differences do not weaken each other but synergistically complement each other and contribute to create a meaning.” [Pinna et al. 2009: 231]

whole, a second step breaks this whole up again into a heterogeneity of perceptual parts in order to – in a third step – combine homogeneity and heterogeneity into a perceptually meaningful whole. Since this perceptual meaning is always open for changes and re-interpretations due to variations of happenings⁹¹ or varying contexts,⁹² however, the hierarchy might constantly split up again into parts with emergent properties the amodal whole from which they emerge does not possess. Thus the higher one proceeds, i.e. the more meanings one perceives of a Gestalt, the more properties emerge from parts *and* wholes. Taking perceptual meaning seriously would thus imply a confrontation with the standard conceptualization of emergent levels from parts to wholes for which differentiation does not occur in an upwards (or ‘outwards’, in the onion-skin model) direction. What is needed to account for perceptual meaning – and I would like to account for it to integrate emergent perceptual meanings into the ontological nature of PWO – is a more flexible model of emergence in which ‘higher’ or ‘more comprehensive’ not only implies wholification, but also partition (see ‘Dif₅’ below). Such a model of levels is admittedly hard to image, because it itself can only emerge out of a particular phenomenon in a shape unique to this phenomenon instead of being imposed on it as a static geometrical figure like a pyramid or a sphere. The question is if such a model or an approach towards it is available in the recent literature on emergence.

(3) Before suggesting one promising model, it is necessary to mention a third recurrent theme in the recent literature on emergence: downward causation. Already the adjective ‘downward’ presupposes a vertical hierarchy of levels, which in turn presupposes an ontological understanding of emergence. Downward causation is therefore “typically defined as the causation of lower-level effects by higher level-entities.” [Paoletti et al. 2017: 1] On the one hand and in a rather intuitive or commonsensical perspective, the idea of downward causation might appear as immediately compelling. Plenty of examples can be found that seem to illustrate and thereby confirm it: Social groups such as nations determine the behavior of their members via legal and normative regulations; an organic whole such as a body assigns a certain function to its cells and organs to make them work in support of the whole’s survival; the single stones of a mosaic provide an aesthetic expression only in relation to the more comprehensive picture that emerges from their particular arrangement. On the other hand and in a rather logical and ontological perspective, the idea of downward causation raises fundamental problems which make every attempt at providing precise and coherent approaches towards it a complicated matter.⁹³ The complications mainly lie in the paradoxical nature of downward causation, because, as Hulsmit [2006: 265] puts it, “downward causation seems to violate the principle of irreversibility that is considered to be inherent to the principle of causation. By saying that B is the cause of A, we mean among other things that B explains or conditions or causes A and that A does not explain or condition or cause B.” But how can something cause its own cause, or, in a weaker formulation, how can a whole with emergent properties exert causal influence on the parts or processes by which it is caused? It is clear that in order to solve this paradox or at least to accept and argue in favor of its existence, a theory of two-sided part-whole dependency

⁹¹Cf. Pinna [2010: 71].

⁹²Id.: 65.

⁹³Gillet [2017: 243] states this point clearly: “Although scientific emergentists [...] have articulated the broad outlines of this novel position, many of its key details have been left unarticulated. In particular, scientific emergentists have not given us precise accounts of the Fundamental Downward Relation.”

is required.⁹⁴

In order to do so, however, some other problems should be addressed, one of which concerns the question whether upwards and downwards causation occurs synchronically or diachronically, i.e. whether parts and whole causally influence each other at the same time or whether downward causation happens temporally before or after upwards causation.⁹⁵ Furthermore, in Campbell's original definition of downward causation, he refers to 'laws' of higher levels. Gestalt theorists in the tradition of Wertheimer also speak of 'laws' or 'principles' of grouping.⁹⁶ But what such laws or principles really mean and presuppose often remains an open question, the answering of which could help to keep under control the well-known inflation of grouping principles. Accordingly, Heil [2017: 46] poses the following legitimate questions: "Are laws governing higher-level systems derivable from lower-level 'fundamental' laws? Are higher-level laws 'special cases' of laws at lower levels? [...] What features of the universe answer to statements of laws?" Furthermore, Hulswit identifies in the literature on downward causation an important yet implicit distinction concerning the question of what effectuates downward causation: Is it effectuated by *general principles* or laws residing in a particular whole or is it effectuated by the particular whole itself such that the causation in question is a *concrete event*?⁹⁷ Such problems are not only relevant for an exact determination of the ontological nature of PWO that naturally involves a strong version of emergence, but also for every comprehensive theory on supra-summative Gestalt perception. For reasons of space and time, however, it is unfeasible to elaborate on this question in the present project.

More importantly right now and perhaps more realizable for an implementation of the idea of downward causation into the perception of part-whole relations is a specification of what *kind* of causation a whole has on its parts. In the context of Gestalt theory, for which emergence and part-whole hierarchies play a central role, as we have seen, Wertheimer speaks of "*whole-determinations of parts*" (*Ganzbedingtheiten*) [Wertheimer 1938: 14]. Even modifications of parts in a whole "are determined by whole-conditions and the events initiated by their occurrence run a course defined by the laws of functional dependence in wholes." [id.] As with downward causation in the discourse on emergence, the Gestaltist 'downward determination' can be interpreted in several ways.

On the most general level, downward causation can be understood either as involving a proper causal relation from the emerged whole to its constitutive parts or as a relation in which a whole acts downwards upon its parts in a non-causal yet otherwise influential way. A proper causal relation, which is already suggested by the very term 'downward *causation*', would imply

⁹⁴Heil [2017: 43] puts it as follows: "The conception of levels here is broadly mereological: lower-level items are parts of higher-level 'systems'. Downward causation would occur when encompassing wholes interact causally with their parts. The result is a two-way—lower- to higher-level and higher- to lower-level—dependence: wholes that depend on assemblages of parts causally constrain the parts' behavior."

⁹⁵Cf. Kim [2000: 307], who argues that synchronic downward causation would violate the principle of transitivity that is intrinsic to causation, which is why diachronic causation is preferable. Cf. also Hulswit [2006: 271], who states that this problem only occurs because Kim understands causality as efficient causality in the Aristotelian sense, whereas he states that we can understand causality also as formal causality: the "fact that similar patterns and forms appear in nature in settings that seem to bear no relation to one another [...] led to the idea that there must be some causal 'influence' which, contrary to efficient causal influence, is independent from the components of the system, and which explains the form the system takes."

⁹⁶Cf. subsection 6.3.2.

⁹⁷Cf. Hulswit [2006: 266–270].

firstly that a whole w would cause its parts p_{1-n} in the sense of *bring them into existence* or *actualizing* them, like a driver of a car causes an accident that had not existed prior to its being caused by the driver. This is, however, not the case for an emergent whole or a whole with emergent properties that exert(s) downward causation, because the constituting parts on the lower level must either exist prior to or at least simultaneous with the higher level. A melody, understood as a transposable whole with Gestalt qualities as defined by Ehrenfels, does not cause, in the sense of create, its own tones, although the particular sound or sounding-together of the tones may depend on the more general character of the melody. Moreover, a proper causation would also imply an asymmetrical relation between w and p_{1-n} , such that if p_{1-n} causes (i.e. makes emerge) w , then w cannot function as the cause for p_{1-n} in return (what Hulsmit calls the ‘paradox of downward causation’). The best example for this would be the impossibility of a perpetuum mobile, which would cause the energy that is needed to cause its own functioning. In addition, proper causation also implies that the cause is spatiotemporally external to its effect, in the same way that a billiard ball B_1 , which causes billiard ball B_2 to move, is spatiotemporally external to the latter. An emergent higher level, however, cannot be said to exist spatiotemporally external to its lower level constituents. For example, the emergent isosceles triangle that ‘causes’ a perceptible connection between the three dots \therefore is not an outside interference but an internal (retro)activity of a self-organizing system in a nutshell.

For reasons like these, it is worthwhile to consider alternatives to proper causal relations between the higher level of w and the lower level of p_{1-n} , i.e. ‘non-causal’ kinds of the then misleading term ‘downward causation’. After all, the mere fact that a non-causal relation from w to p_{1-n} can be assumed at all should not be strange within a strong emergentist framework that already postulates a non-causal upwards relation from p_{1-n} to w . It is helpful for the further line of argumentation and its application to perceptual meaning of dynamic part-whole interdependence that Paoletti et al. [2017: 7] list four possible alternatives that have been elaborated on in the literature on emergence:

“First, higher-level entities could *select* the powers to be activated at the lower level. What *can* happen at the lower level is wider than what *actually* happens. The higher-level entities are responsible for the selection of certain lower-level outcomes, rather than others, by making it the case that certain powers rather than others are activated.

Secondly, the higher-level entities could *constrain* what happens at the lower level, by imposing certain limits on the lower-level outcomes, by reducing the degrees of freedom of lower-level parameters, and so on.⁹⁸

Thirdly, the higher-level entities could *structure* the lower-level goings-on in specific ways, so as to generate specific outcomes.

Fourthly and finally, the higher-level entities could provide the lower-level entities with *novel* powers.”

⁹⁸This alternative would be most in line both with Campbell’s [1974: 180] original introduction of downward causation into the current discourse on emergence (“all processes at the lower levels of a hierarchy are restrained by and act in conformity to the laws of the higher levels.”) and with Wertheimer’s notion of ‘whole-determination’.

To me it seems that these four alternatives are neither mutually exclusive, nor does the realization of just one of them or a combination of them form the only veridical explanation of downward causation. Making claims concerning emergence, levels of reality and downward causation relies for the most part, despite the intuitive and scientific examples and arguments that may be given, on metaphysical speculation, which is, in the end, a mixture of ideally justifiable (inter-)personal preference, experiential evidence in the broadest sense, and applicability to one or more ontological domains. If we determine the ontological domain to be the empirical perception of parts and whole, in particular their perceptible dynamic interplay based on their ontological interdependence, then there is at least one model in the recent literature on emergence that deserves special attention for this matter. This model mainly goes with the fourth alternative listed by Paoletti et al., and in so doing, it deals with a number of difficulties that according to Paoletti et al. every consistent theory of downward causation is confronted with:

- Dif₁ It should be able to show that, parallel to the distinction between epistemological and ontological emergence, downward causation is not just an explanatory principle, but that there are “real relations of top-down influence” [id.].
- Dif₂ It should show how the reductionist assumption of a ‘causal closure principle’, which generally says that entities on the lowest level, i.e. the micro-physical level, cause horizontally but not upwards,⁹⁹ can be overcome in order to make upwards emergence, on which downwards causation relies, possible at all.
- Dif₃ It should “demonstrate that a non-reductionist conception of downward causation has to be favored over a reductionist one.” [id.]
- Dif₄ It should offer examples of how it can be applied to science. For the present context, this difficulty should also be related to research on Gestalt perception as perceptual meaning.

Let me add to this two more difficulties that we encountered in the previous argumentation, viz. that a consistent theory on Gestalt-emergence and downward causation should

- Dif₅ avoid the exclusive hierarchization of $\begin{matrix} \text{whole} \\ \updownarrow \\ \text{parts} \end{matrix}$ when it is – in the case of perceptual meaning – also the heterogeneity of parts that appears on a higher level, such that also $\begin{matrix} \text{parts} \\ \updownarrow \\ \text{whole} \end{matrix}$, or more appropriately $\begin{matrix} \text{parts whole} \\ \updownarrow\updownarrow \\ \text{whole parts} \end{matrix}$.
- Dif₆ suggest a dynamic framework in which the process of perceptual meaning creation of part-whole structures does not stop with a unification of whole homogeneity and part heterogeneity, but can continue and lead to novel meanings a Gestalt entity might display, such that wholeness of meaning is only a transitional stage instead of the final upshot.

⁹⁹Kim [2005: 15] defines this principle as follows: “*The causal closure of the physical domain.* If a physical event has a cause at t , then it has a physical cause at t .”

7.3.2 Emergence and Demergence

In their 2017 article ‘Emergence and Demergence’, R. Anjum and S. Mumford delineate a model that could, to a greater or lesser extent, address these six difficulties. I would like to take this model as a basis for an emergentist characterization of PWO within the restricted realm of empirical perception. This means that in addition to my summary of the authors’ model, I will suggest minor interpretative amendments that are intended to make this model fit into the Gestalt context, particularly of perceptual meaning (section 7.1) and splitting/merging (7.2), i.e. of the dynamic part-whole interdependence that has been developed so far. To begin with, the authors distinguish the practical side of emergence and downward causality from its theoretical side. In the practices of science and everyday life, we take these phenomena for granted: We lift a chair (emergent whole), not its molecules (lower level physical parts); we change our whole lifestyle to treat (i.e. exert a downward influence on) a concrete bodily or mental problem.¹⁰⁰ It is rather on the theoretical, one could also say metaphysical or ontological side, where we encounter difficulties like the ones just listed (dif₁₋₆). But only by theoretically elaborating on emergence can we understand and explain what we take to be a ‘brute fact’ in practice.¹⁰¹

More specifically and in addressing dif₁, the authors attempt to theoretically understand and explain strong, i.e. ontological emergence, “where something genuinely novel emerges in nature” [id.: 93] As one example among others that is particularly interesting for our compilation of perceptual part-whole interdependence, they mention “[m]eaning emerging from meaningless components”.¹⁰² If we take ‘meaningless components’ to be stimulus parts and ‘meaning’ to be meaningful wholes, we would only have to insert the intermediate steps of homogeneous grouping/merging and heterogeneous differentiation/splitting to complete the basic framework suggested by my interpretation of Pinna and Koenderink. This framework’s problematization of the conventional directionality of a part-whole hierarchy (dif₅) can then be approached with the authors’ clarification that in their model, we do not have to “accept a strict hierarchy in nature or pyramid of the sciences in order to argue for emergence, or to state it in terms of levels of phenomena. The notions of relatively higher- and lower-level phenomena can be outlined in a metaphysically innocuous way in terms of part-whole composition. On this use of the term, if one set of phenomena jointly composes another phenomenon, then the former is lower level than the latter.” [id.: 94] However, this ‘relativization’ of a part-whole hierarchy that is supposed to be inscribed into the fabric of nature still implies that it is always the many that are lower, such that composition is exclusively bottom-up and decomposition exclusively top-down. It thus seems as if, on a first glance, dif₅ is not solved in a manner such that it would fit into the framework of perceptual meaning with splitting/merging, and therefore not fit what the determination of PWO’s ontological nature consists in so far.

This impression is enforced by the way the authors continue to develop a positive account of dif₁. In this account, they define emergent phenomena as those phenomena “where wholes

¹⁰⁰Cf. Anjum et al. [2017: 92].

¹⁰¹“There has to be some intelligible sense in which emergent phenomenon, *E*, emerges from its base-level phenomenon, *B*, rather than from anything else; or that *E* is just free floating (as in forms of substance dualism). The emergence of *E* cannot be just a brute fact.” [id.: 93]

¹⁰²Other examples are “Life emerging from lifeless components”, “Mind emerging from mindless components”, “Free agency emerging from nomologically constrained components”, “Social phenomena emerging from individual components” [id.: 93]

have powers that are not possessed by their parts” [id.: 95], whereby “the powers of the wholes will be higher level than the powers of the parts of which they are composed.” [id.] But how, to continue with dif_1 and to leave dif_5 aside for the moment, does an emergent power of a whole come into existence? What are the existence conditions of ontological emergence? These neither consist in ‘mere composition’, which we could also call a ‘summation’ of parts,¹⁰³ nor do they consist in what the authors call ‘nonlinear composition’, where the power resulting from the composition of parts is, unlike in a mere composition, not proportional to the sum of the parts. For example: “Candy bars cause pleasure when eaten but in a nonlinear way. 10 candy bars do not produce 10x the pleasure of one [...]. It is probable that consumption of 10 candy bars in short order actually produces negative pleasure.” [id.: 97] In the realm of visual part-whole perception, we could say that while the sum of two grains of rice in front of you is a quantitative and countable duality, the sum of one thousand grains of rice in front of you is not ‘one-thousandness’, but an uncountable heap which still has no emergent properties (be it Gestalt laws, be it perceptual meaning) in the proper sense.

Furthermore, “[c]ounting nonlinear composition as emergent would, again, make the phenomenon too commonplace.” [id.: 97] This also applies to new qualities which wholes may possess due to certain spatial relations between their constitutive parts, for example when something “is coloured even though its parts are not, or a tabletop is square, though its parts are two triangles. [...] To this extent, composition is merely aggregation along with appropriate relatedness, which we think is still not strong enough.” [id.] This can be called ‘modest emergence’. In the present context, it is important to mention that ruling out part-relatedness from strong emergence and classifying it as a ‘modest’ type would imply that the classical Gestalt laws or principles of grouping, such as proximity or symmetry,¹⁰⁴ do not account for strong emergence, since they are reducible to spatial (and/or temporal, in the acoustic sphere) ordering of parts. I personally sympathize with this stance, since it would, on the one hand, lead to fewer ontological commitments caused by proliferations of strong emergent wholes. For instance, why should and how could a line that emerges from two juxtaposed dots count as an ontologically novel entity with causal powers on its own, even if its existence is reducible to the cognitive domain and not to a mind-independent sphere? On the other hand, it would leave open the possibility of strong emergence of perceptual meanings, since and *if* these were to fall into the range of what the authors call the ‘causal-transformative model of emergence’.

This ‘causal-transformative model’ is a model according to “which some powers emerge from the components interacting and being changed by their causal participation in the whole.” [id.: 98] While the mere order or arrangement of parts is insufficient to declare a resulting whole as ontologically emergent because in this case the parts cannot be said to undergo any change, in the model that is proffered here, it is the transformation of parts that leads to novelty. Novelty thus comprises not only the novelty of the whole, but also a certain ‘renaissance’ of the parts themselves. Although the kind of transformation the parts undergo might be *numerical*,

¹⁰³“A mere addition of powers [...] does not adequately satisfy the pre-theoretical requirement of emergence that it involves novelty in the higher-level phenomena. There is perhaps novelty in some sense—the whole does have something that the parts lack—but this comes from the aggregation of powers alone. Confirmation that this is insufficient novelty is that it would make emergence far too cheap and easy and virtually ubiquitous. Every complex whole—that is, every whole that is made out of parts—would have emergent powers, which were just the addition of the powers of the parts.” [id.: 96]

¹⁰⁴Cf. subsection 6.3.2.

for example in quantum entanglement,¹⁰⁵ it has to be at least *qualitative* in order to cause emergence. Scientific examples (cf. dif₄) next to quantum entanglement would be chemical bondings, e.g. of hydrogen and oxygen into H₂O¹⁰⁶ or of chlorine and sodium into NaCl.¹⁰⁷ A spontaneously chosen example of mine related to perceptual meaning would be the emotional expression of a face in which every relevant part of it, in particular the eyes and the mouth, qualitatively changes in order to make the expression of the whole emerge and visible. A sad eye can only look sad if it is seen in a sad face, and the question of why an emotion is expressed is nothing but the evidence that there is a meaning, i.e. a *happening* in the previously discussed sense,¹⁰⁸ behind it. In the context of such a meaning, a part is not the same as it was before it entered into the process of meaning creation, which is why the whole cannot relate to it anymore: “once composed into a whole, the parts no longer exist as they did prior to that composition; so you cannot say that the whole depends on those original parts, or that same parts = same whole, when the parts are not the same as before. The parts have been transformed in the process of forming the whole, and thus lose their qualitative identity.” [id.: 101]

The transformation of parts has to be understood as initiating the upwards movement towards the whole, not as a result of downwards causation from the whole to the parts. While the former is defined as emergence and causes wholes with emergent properties, the latter is called ‘demergence’ and causes novel properties in the parts via the emergent properties of the wholes.¹⁰⁹ The transformation of parts in this model is thus a “two-stage transformation [...] for the constituent parts of wholes. They undergo a causal transformation in composing an emergent power. But that emergent – hence higher-level – power is then capable of subsequent downward causal influence, producing further change in the parts.” [id.: 104] If, in the context of part-whole perception, we were only to remain on the higher level, for example because in some cases highlighted by classical Gestalt theory it is the directly perceptible and thus supposedly primary one, we would ignore that and how the transformations of the parts constantly shape the meaning of the whole, which is the meaning of the parts as well, since the emergent causal powers of the whole act on the parts. Also, the persistence on one vertical level alone

¹⁰⁵“When two particles are entangled, they effectively form a causally connected single unit in which, arguably, the numerical identity of the parts has been lost. If we had two electrons, e_1 and e_2 , then once they have become entangled, there might be no fact of the matter about which is e_1 and which is e_2 .” [id.: 98]

¹⁰⁶“Chemical bonding involves qualitative changes in the elements which enter into the bonding. In forming a whole, the parts have to undergo change. Consider the formation of H₂O, which *prima facie* looks entirely a matter of additive composition. A hydrogen atom has a vacant space on its outer shell of electrons and an oxygen atom has two vacant spaces. When they have bonded, they can be understood as sharing electrons, thereby completing the outer shells of all the atoms—two of them being hydrogen—which thereby forms a stable molecule. The three ‘parts’ have thus each changed in order to form the whole. This change can be at least a part of the explanation why their powers have not simply aggregated. Water, for example, has a power to put out fires, but neither of the components of water can put out fires; indeed, they would fuel them.” [id.]

¹⁰⁷“To take another example, chlorine is a poisonous gas; sodium ignites spontaneously on water. But sodium chloride has neither of these causal powers. And it tastes salty, which none of its components do.” [id.]

¹⁰⁸Cf. section 7.1.

¹⁰⁹“So what this tells us is that emergent powers can then act on their parts, and this is what we mean by downward causal influence. It might be useful to think of this as, to coin a phrase, demergence. Emergence is where there are new powers of wholes in virtue of causal interactions among their parts; demergence is where there are subsequent new powers of the parts in virtue of the causal action of the whole upon them.” [id.: 102]

would hide the fact that – according to the present model – there is not just one upwards movement and then one downwards movement in return in a diachronic fashion. Instead, the interplay of emergence and demergence is, in principle, a *simultaneous* process. Although they might be temporarily extended, cause and effect exist and cause each other's qualities at the same time: “the effect does not complete itself instantly: it takes time to do so. In that time, there is a process of ongoing change that is completed when the cause has eventually exhausted itself and ceased to act. Cause and effect are both temporally extended, therefore, but their extensions are simultaneous.” [id.: 101] Also, in Pinna's model of perceptual meaning, the single steps in which meaning emerges should not be regarded as a temporal sequence, but rather as a phenomenal appearance.¹¹⁰

Moreover, since both the parts and the whole function as causes in the causal-transformative model, both can exhaust themselves. Related to the perceptual meaning of Gestalts, we could say that the simultaneous ongoing and mutual process of part-whole causation as emergence/demergence stops, for example, when a happening on the part level comes to an end (e.g. if a fungal decay is removed from a tree's trunk, the whole tree can become and appear healthy again) or when a whole initiates the end of a happening in its parts (e.g. the introduction of a law may end the protesting of a social community's members). Otherwise, this bidirectional process continues in time and is thus in agreement with the temporality involved in the awareness of a perceptible object, including its being split and merged. The notion of demergence is also in agreement with the observation that, as Pinna et al. [2009: 228] put it, “[a]s the whole meaning emerges, each component adjusts to it and takes on new perceptual properties derived from and synergistic with that meaning [i.e. demergence, M.S.] and, *vice versa*, the whole meaning emerges as a result of what is perceived in every single component.”

However, as we have seen, not every arrangement of parts is a cause for an emergent whole and is therefore not itself transformable. The condition for parts to become transformed, both as causes and simultaneously as effects of demergence via the creation of a whole, is that they have to *interact*. This happens for example via entanglement and bonding in Anjum et al.'s examples or via sharing and expressing the same emotional quality in my example of the face. The interaction of parts presupposes their entering into a “mutual manifestation partnership; and this requires that, in addition to the components existing, they must also be suitably related.” [id.: 100] One way of relation is by spatial arrangement and proximity, for instance when a match and its box interact to create fire.¹¹¹ I think that the countless textbook examples and experiments of Gestalt grouping based on spatially close dots and lines, on the other hand, cannot be interpreted in these terms of interaction, since the stimulus parts do not and *cannot* change if a perceptual whole is perceived. For example, the single tones $t_1 t_2 t_3$ of a melody $T = \{t_1 t_2 t_3\}$ do not change into $t_4 t_5 t_6$ while T is instantiated, otherwise it would not be T that is perceptible.¹¹² Spatial arrangement and proximity is not necessary, however, for a mutual

¹¹⁰“These steps have only a phenomenal status without any definitive temporal order among them. They are arbitrary phenomenal separations of a perceptual result that appears indivisible.” [Pinna et al. 2009: 229]

¹¹¹Cf. id. [100].

¹¹²Cf. for example Pomerantz et al. [1977: 434], for whom part interaction effectuates emergent features of a Gestalt without involving any change in the stimuli parts: “The existence of configural superiority effects might seem to imply that wholes are not recognized by prior recognition of parts such as individual line segments. Indeed, the position we have taken here is that wholes are perceived by their emergent features which are not the parts themselves but rather stem from the interaction of these parts. Thus, a figure such

manifestation of parts: Users of social media, for example, interact and often are affected by the emerged digital community without spatial proximity. It is also not necessary that every mutual manifestation leads to an emergent whole and thus effectuates the transformation of parts. What the Gestaltists call and reject as the ‘constancy hypothesis’ on a perceptual level, i.e. that a particular arrangement of stimuli necessarily leads to a particular percept, the causal-transformative model calls and rejects as ‘dispositional modality’ on an ontological level.¹¹³ This makes the latter, among others, applicable to the former, without sharing its tendencies towards one-sided part-whole primacy. What is necessary, however, is a certain continuity of the mutual manifestation. If the parts stop interacting and thus transforming, then the emergent whole stops developing causal powers that retroact on the parts. In other words, for the emergence/demergence interplay to take place, there has to be an ongoing, dynamic interaction among the then constantly transforming parts. “The idea is that emergent properties are sustained through the ongoing activity; that is, through the causal process of interaction of the parts. A static instantaneous constitution view wouldn’t provide this.” [id.: 101] For example, the aesthetic effect of a poem is generally stronger the more its individual parts (stanzas, verses, words, syllables) interact and receive new meanings, i.e. ‘transform’ when interrelated. The transformation then continues when the meaning(s) of the whole demerges into these parts.

Let us now, before turning to dif₅, delineate how Anjum et al.’s ‘causal transformative model’ answers to dif₁₋₄ and dif₆. Dif₁ concerns the distinction between epistemological and ontological emergence, but in the downwards direction. As we have seen, the model introduces the notion of demergence, which is genuinely ontological and not just based on explanatory reasons, because it is taken to cause novel powers in the parts through the emerged whole. Additional to novel powers of already existing parts in the lower level, the model even enables the process of demergence to create novel parts.¹¹⁴ A good example for the creation of a part in the context of perceptual meaning would be the case of holes. Taken as an entity in itself, a hole does not exist. Only when it is surrounded by other entities which together create – as parts – a topological whole, does a hole come into existence and gain as well as distribute perceptual meaning.¹¹⁵

Regarding dif₂, the ontological account of emergence that is presupposed by the ontological

as a triangle is not recognized by the detection of its component line segments but by the detection of more complex features such as intersections or closedness.” But if the stimuli parts were to undergo change during the process of emergence, i.e. if the component lines were to assume a different geometrical form, then no triangle could result from their interaction.

¹¹³“First, because this is a causal account of emergence, and all cases of causation are subject to the possibility of interference and prevention, they are to be understood as operating with what we call the dispositional modality [...]. This means that we could have the same type of components, appropriately arranged, and while they may tend to form a certain higher-level emergent property, there is no guarantee that they will do so. We cannot say simply that if we have the same components within *B*, we will have the emergent phenomenon *E*. That depends on the causation working out successfully, and many causes don’t succeed in manifesting their effects.” [Anjum et al. 2017: 101]

¹¹⁴“However, emergent powers can actually affect what there is in the base, effectively making new *B*-level phenomena, such as when scientists synthesise new elements, like ununoctium, that do not naturally occur. So demergence can lead not only to new properties/powers at the lower-level, but in special cases the creation of new entities too.” [id.: 107]

¹¹⁵On the role and perception of holes in Gestaltlike wholes cf. for example Nelson et al. [2001] and Bertamini et al. [2012; 2015].

account of demergence makes the authors argue against the principle of causal closure, according to which the micro-level, which is generally taken to be physical, can only cause physical entities and not, for example, immaterial wholes of a higher level such as minds, social structures or – in our case – perceptual meanings.¹¹⁶ On the one hand, the ‘causal transformative model’ takes the micro-level indeed to be the physical one, which makes everything that emerges from it dependent on physical laws and entities.¹¹⁷ We can easily equate this stance with the ontological status that stimulus parts are taken to hold in the Gestalt context and in so doing offer another reason why this model can be applied to meaningful Gestalt perception. On the other hand, this model claims that the micro-physical level, which would also be the level of stimuli on which Gestalts depend, changes in the process of emergence/demergence, such that higher level phenomena indeed causally influence the physical nature of reality in the same way that they are simultaneously influenced by it. Stimuli do not change by their being perceived, but their inherent meaning might do to such an extent that they should best be approached from the perspective of the higher-level whole, since “the basal level is changed. When the base elements enter into those causal relations, they transform such that sometimes they can no longer be treated as the underlying elements or units. The higher-level whole now has to be understood as the unit because it makes no sense to disaggregate it into its components. The components have been altered, as we see with quantum entanglement and a host of other cases. We contend, therefore, that it does make sense to reject the causal closure of the basal level.” [id.: 107]

This rejection of the causal closure principle and the ontological account of emergence/demergence that goes along with it has the advantage – *ad dif₃* – that it offers a *positive* account of higher-level/lower-level interaction. This account is neither forced to *reduce* wholes to the physical level, nor to *constrain* and thus *negatively* determine the emergent or demergent powers of wholes or parts. Instead of claiming that the possibility of what parts can become is restricted as soon as they transform to create a whole, or that a whole cannot be anything else than what the interaction of parts determines it to become, the causal-transformative model allows for a high degree of what can be called ‘ontological freedom’ in that not necessarily predictable novel powers and entities are created during the processes of part-part and part-whole interactions.¹¹⁸ This stance would be an alternative to Wertheimer’s notion of ‘whole-determination’, which

¹¹⁶Anjum et al. [id.: 105–6] describe the idea behind the causal closure principle as follows: “According to a standard way of thinking, everything at the base level is causally closed. Thus, a base-level state or event, B^* , must be caused completely by another base-level state or states, B (whatever we take the relation of causal relations to be). Emergent phenomena seemingly threaten this view. Suppose E is emergently dependent on B . If E is supposed to be able, through downward action, to cause B^* , then the base level cannot be causally closed. Just as bad, if E causes E^* , another high-level phenomenon, but E^* is supposedly emergently dependent on B^* , then the causal closure of the base level is still threatened.”

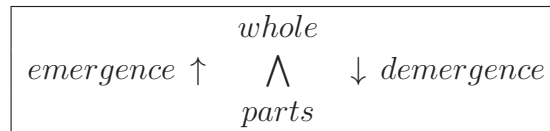
¹¹⁷“It should also be noted that our emergentism still gives a special place to the base level. It is from the base properties that higher-level properties emerge—they are causally dependent on them—as long as they enter into the ‘right’ causal relations with each other. So it is consistent with the idea that everything is ontologically dependent in some sense on micro-physical entities [...]” [id.: 107]

¹¹⁸“Fourth, our characterisation of emergence is a positive one, in answer to Kim’s first challenge. In Kim’s account, a property E is emergent when it depends upon but is not reducible to B . But this, he says, is a negative characterisation, like when we say that something is not-red, which has no unificatory or explanatory power. Our account does not take such a route. Rather, we provide positive conditions for what must happen to E in order for it to count as emergent: through their interaction the parts undergo a change from which the whole they compose has a new power. This is as positive a characterisation as any can be.” [id.: 105]

basically constrains the development potentialities of a Gestalt's parts instead of supporting their autonomy to further transform and make something emerge by it.

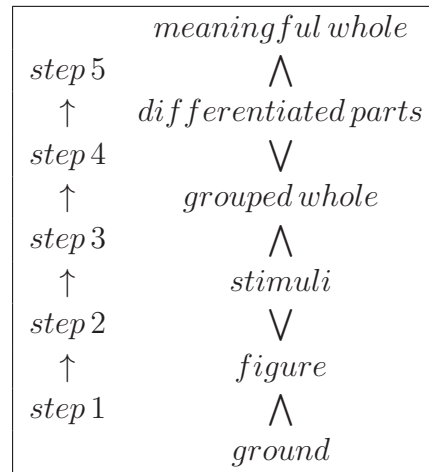
Regarding dif₄, examples for the model's scientific applications have been given, both by the authors themselves and by my attempt to relate this model to part-whole perception. What is more, the authors also describe how this model could deal with dif₆, viz. by providing a dynamic and simultaneous, ontologically enriching interaction between the lower and the higher level. It is as if both parts and whole constantly mirror themselves and in this act of mirroring re-create themselves and/or their qualities and causal powers. This is not an endless process, however, because it can end whenever a "cause has eventually exhausted itself and ceases to act." [id.: 101]

In order to apply this model of ontological emergence/demergence entirely to (at least my interpretation of) the phenomenon of perceptual meaning and its specification as splitting/merging, however, we need to find a solution for dif₅. There are three options available. Either we opt for the classical, pyramidal hierarchy in which wholes stand higher than parts. This would be in line with the causal-transformative model, according to which, as we have seen, "the powers of the wholes will be higher level than the powers of the parts of which they are composed." [id.: 95] The dynamics of this model consists in its mutually enriching and simultaneous up and down movement between parts on the lower level and a whole on the higher level:



However, it would contradict the kind of hierarchical shape that seems to be presupposed by Pinna for the step sequence towards perceptual meaning, which rather looks, with a minor variation to the original formulation,¹¹⁹ like the following:

¹¹⁹In the most explicit formulation of Pinna's model, there are four and not five perceptual steps towards a meaningful whole. He does not posit a step from the accentuation of a figure from a ground to the pre-perceptual differentiation of this figure into single stimuli. I think, however, that we should include this step, not only because it is in line with the general paradigm of Gestalt theory to make at least a functional if not an ontological distinction between stimuli and their grouping into perceptual wholes with perceptual parts, but also because in other places, Pinna includes the intermediate step of stimuli into his vertical framework. Here is the most explicit formulation, followed by references to passages in which Pinna includes this step: "Phenomenally, there are several steps in the 'perceptual organization' (that is also a 'visual interpretation') of the previous whole object in specific shapes and meanings. The first perceptual step is the 'segregation' of each component from the background. The second one is 'putting together' or grouping the segregated elements in homogeneous wholes on the basis of similarity of shape. The third is the complementary 'separation' and the clear distinction of the wholes on the basis of dissimilarity. Similarities and dissimilarities lead to the fourth and final step, where all the differentiated wholes and each single element are put together again by virtue of another and more global grouping factor that overcomes the dissimilarities of the components: it is some kind of *meaning* principle that perceptually solves the differences among wholes and elements at a higher level making them appear strongly linked just by virtue of the differences. In this way similarities and dissimilarities complement and do not exclude each other. This can be the level where the perceptual meanings are established." [Pinna et al. 2009: 228–9] The intermediate step of stimuli is mentioned, however, in Pinna et al. [2009: 231, 267]; Pinna [2010: 70]; and id. [2011a: 227].



Thus, whereas Anjum et al. seem to advocate a model in which ‘upwards’ means ‘unification’ and ‘downwards’ means ‘differentiation’, in Pinna’s model there is only an ‘upwards’, which can either mean ‘unification’ or ‘differentiation’. In my understanding of it, this latter ‘upwards’ is, in principle, open-ended, because if there are new happenings in the differentiated parts, we have to open up or ‘split’ (Koenderink) the meaningful whole again and perceive the now adjusted parts to repeat the fifth step towards a whole with a then novel meaning. While the first model is preferable due to its higher degree of simplicity and broader applicability to ontological regions beyond empirical perception, the second model seems to be perfectly tailored to the Gestalt tradition with the significant turn towards part-whole interdependence and perceptual meaning as happening. The problem with both models, however, is that their hierarchical pattern appears to be predetermined such that it can be imposed on the phenomena in question. Their stable geometrical forms make them rather a model *for* than a model *of* part-whole interdependence. While what happens inside either model may indeed be dynamic and unpredictable, the model itself does not change and is therefore disproportionately more stable than the often unique and ambiguous transitions of parts into a whole or vice versa, be it in reality, in general or in empirical perception in particular. What is presupposed is always a certain type of vertical hierarchy, a sequence or simultaneity of steps that have already been figured out beforehand to make the phenomena fit into the model.

Instead of unnecessarily and prematurely rejecting both models due to their static architecture, however, it is also possible to combine them in order to create and opt for a third option. For this third option, we could combine the valuable insight of the causal-transformative model of a creative downwards movement (demergence) with the equally valuable insight of the perceptual-meaning model of a splitting in an upwards direction. The third option would then consist in a dynamization of the hierarchical pattern itself, not only of the phenomena it is applicable to. If what is ‘up’ and what is ‘down’, i.e. if the position of parts and whole, is not accessible by either going upwards or downwards on a vertical scale, but by *making the pattern of the model itself reversible* such that up and down are rescaling and switchable according to the spontaneous transitions of the part-whole structure, then we could solve dif₅ by providing a dynamic picture of meaningful, perceptible and interdependent part-whole phenomena. This picture, as an ambiguous image itself, could then correspond to the oscillatory nature of the phenomena themselves. In a final step towards the determination of the ontological nature of PWO, I would like to point towards the possibility of such a reversible model by drawing on Gestaltist research on multistability, which has been particularly evident in figure-ground re-

versals. This will serve to clarify the current vagueness in which the third option might appear at the moment. For a preliminary impression, the reversible model could be visually sketched like **XX**, where up and down can denote either parts (many) or one (whole). But before going deeper into that, let me formulate the third principle for PWO in the empirical sphere, based on my agreement with the causal-transformative model of emergence/demergence and its principal applicability to perceptual meaning, regardless of its different conceptions of a part-whole hierarchy:

PWO_{ind_emp_3}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole become perceptually meaningful during the more general processes of ontological emergence and ontological demergence.

7.4 Multistability and Reversing Hierarchies

7.4.1 Ambiguous Figure-Ground Phenomena

Let us approach the notions of part-whole multistability and part-whole reversibility by looking at figure-ground phenomena. Besides perceptual grouping and its cognitive conditions, the study of figure-ground phenomena is the second major and therefore extensively investigated subject in Gestalt theoretical research. What is the difference between grouping and figure-ground? “In general, grouping determines what the qualitative elements of perception are, and figure-ground determines the interpretation of those elements in terms of their shapes and relative locations in the layout of surfaces in the 3-D world.” [Wagemans 2012a: 9] We are all familiar with figure-ground phenomena in our daily perception of objects. If we stand in front of a house, for example, behind which there is a sky, then we see the house in the foreground as figure and the sky in the background as ground. Or, to give an example by Koffka,¹²⁰ in reading this text, the letters are the figure and the white sheet is the ground. Whereas the house and the letters are figures because their contours are clearly demarcated, the respective grounds continue behind the figures and we cannot grasp their borders in relation to the figure (of course, the white sheet can also function as a figure with clear-cut contours for the surface of the table on which it is placed, etc.). However, figure-ground relations are not always as distinct and definable as in these examples. It is precisely the potential ambiguity and multistability of figure-ground phenomena, i.e. the indeterminacy and reversibility of what functions as a stable figure and what as stable ground within one and the same percept, which is so fascinating about this topic.

The bidirectional relation between a distinguishable figure and the perceptually amorphous ground from which the figure in question stands out has already been artistically depicted already in Roman and Renaissance mosaics in order to create depth and ambiguity.¹²¹ But it was E. Rubin in his influential 1915 book *Synsoplevede Figurer. Studier i psykologisk Analyse* (*Visually perceived figures. Studies in psychological analysis*) who approached this empirical phenomenon for the first time in a theoretical manner. According to Rubin, there are objects

¹²⁰Cf. Koffka [1925: 556].

¹²¹Cf. Wade [2004; 2012: 336].

in perception, which are, *nota bene*, to be distinguished from how they objectively are,¹²² and which can be experienced as two or more different entities, depending on the determination of what functions as figure and what as ground.¹²³ Probably the most famous example given by Rubin is the vase-faces or goblet figure, in which we can either recognize two contoured faces on a white ground that continues behind the faces or a white vase on a black ground (Figure 7-4).

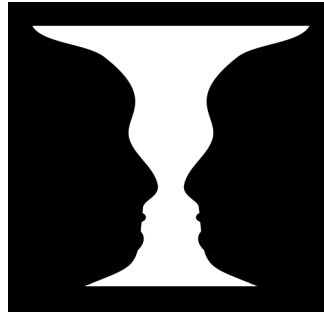


Figure 7-4: *Ambivalent Rubin Vase*¹²⁴

In this and similar examples, we can distinguish two levels of perception, which are, on the one hand, equally stable, but on the other hand exclude each other such that there is a perceptual ambiguity due to the occurrence of figure-ground reversals. A number of aspects have been studied that influence our perception and evaluation of figure and ground, among others – as listed in Wagemans et al. [2012a: 26–31] – the function of convexity, symmetry, lower region, top-bottom polarity, motion, past experience, and attention.¹²⁵ Such factors influence what it takes for an object to be perceived as a figure or as ground. Furthermore, it was shown that the phenomenon of multistable ambiguity is not restricted to the perception of two levels alone, but can create and reverse multiple levels of depth, for which many artworks serve as primary examples.¹²⁶ Other areas of research on figure-ground perception concern, for example, the shape of holes in figure-ground constellations,¹²⁷ the assignment of figure and ground to

¹²²“Obwohl z. B. die Kontur eines Quadrates vier Bestandstücke hat, braucht dieser Sachverhalt nicht am erlebten Gegenstand vorhanden zu sein, wenn das Quadrat als eine Flächenfigur erlebt wird; man muß sich überhaupt davor hüten, den erlebten Gegenständen all das zuzuschreiben, was man von den objektiven Gegenständen weiß.” [Rubin 1921: xi] Cf. also [id.: 43; 91 f.]. Here and in the following, I quote from and refer to the German translation of *Synsoplevede Figurer. Studier i psykologisk Analyse*, as an English translation is not (yet) available.

¹²³“[...] die erlebte Figur und der erlebte Grund [sind] zwei verschiedene erlebte Gegenstände [...], die unter verschiedenen Bedingungen durch ein und denselben objektiven Gegenstand hervorgebracht werden können.” [Rubin 1921: ix]

¹²⁴This figure is taken from <https://upload.wikimedia.org/wikipedia/commons/b/bd/Facevase.png> [last visited on 7 December 2019]. It can also be found in Rubin [1921: 249].

¹²⁵Cf. Barenholtz et al. [2006: 531] for another overview of literature on such factors that are constitutive for the determination of figure and ground, with special emphasis on figure-ground perception of animated shapes.

¹²⁶Cf. Arnheim [1974: 233] and Tsur [2000].

¹²⁷“By definition, holes are interior regions of objects or surfaces that that do not contain matter. In the cases of primary interest for figure/ground organization, the hole goes all the way through the object, so the background surface is visible through it [...]. The problems this raises for figure/ground perception concern the quasi-figural status of holes. They appear to be distinct phenomenological entities that have a shape of their own, even though they are actually just an empty space through which the background surface can be seen.” Palmer [1999: 286]. Cf. on this topic also Nelson et al. [2001] and Bertamini et al. [2012].

moving images with deforming contours,¹²⁸ or the application to the area of linguistic and cognitive patterns.¹²⁹

The particular interest in the figure-ground phenomenon for the present project has been triggered by the processes of backgrounding and foregrounding of part-whole relations in conceptual metonymy.¹³⁰ A closer inspection of conceptual metonymy revealed that by singling out one part of an experiential domain and by using it as metonymy in language, the whole domain or at least an experiential whole in the same domain is backgrounded, but always retrievable via an act of foregrounding. This is also the case when a whole is foregrounded and the single parts are backgrounded, e.g. when we say ‘Washington’, but actually mean the president of the US. Indeed, there is a noticeable difference between figure-ground reversals and metonymic part-whole reversals. The former usually concerns a one-to-one relation (perceptual object *A* of entity *AB* is seen as figure and *B* as ground, or vice versa) and the latter a one-to-many or a many-to-one relation (either the one whole or at least one if its parts are foregrounded/backgrounded). This is why the commonly studied factors that are constitutive of figure-ground segregation, such as convexity, symmetry, etc., are less informative for the perceptual reversals of parts and whole. The same holds true if we only look at the figure and its properties instead of looking at the properties of the dynamic relation *between* figure and ground.¹³¹ It is true that, although this relation is established prior to the crystallization of the figure, what we become aware of first in perception is often the organized figure with its grouped parts instead of the figure’s dependence relation with its ground.¹³²

What promises to be informative, however, is to look at the momentum of reversal itself, i.e. the dynamic and bidirectional relation of ambiguity between the interdependent poles. In a purely descriptive approach, it should be possible to develop the perceptual characteristics, which are the experienced qualities of figure-ground reversals as such, and to transfer them to part-whole reversals in order to further determine the ontological nature of PWO for the realm of empirical perception. In so doing, it should be possible to suggest an alternative model to

¹²⁸Cf. Barenholtz et al. [2006].

¹²⁹Cf. for example Thiering [2011], who relates the figure-ground structure to *spatial* semantics, and Johnson et al. [1999: 137–169], who argue that we mostly conceptualize and express *time* either as a moving figure with the observer as ground or the other way round, which is, of course, enabled by our embodiment of figure-ground perceptions on the experiential and sensorimotor domains. Cf. also Tsur [2000] on how figure-ground reversals create aesthetic effects in poetry and Wildgen [1995] on lexical and textual ambiguities, whereby both authors take a cognitive linguist stance by showing how abstract and referential language is a consequence of empirical perception. Ertel [1975] applies the figure-ground phenomenon, along with the Gestalt categories of centering and Michotte’s phenomenal causality, to the syntax and semantics of natural (German) language.

¹³⁰Cf. section 5.2 and the second positive characterization of PWO in ordinary language (PWO_{ind_lang_2}) in section 5.3.

¹³¹As Rausch [1966: 872] remarks, there is a tendency to concentrate on the figure and its parts and to neglect the ground and, more importantly, the relation between figure and ground. Then the figure’s properties are usually understood as typical principles of internal grouping and not as properties of relational ambiguity. “Die Frage nach dem Verhältnis von Eigenschaft und Relation [...] läßt sich - und zwar phänomenologisch und konditional-genetisch - auf das *Figur-Grund-Problem* ausdehnen. [...] Anscheinend kann auch das Duo von Figur und Grund sowohl in Form einer Relation (der Figur zum Grund) als auch in Form einer Eigenschaft - des Feldes bzw. der betreffenden Feldpartie - beschrieben werden. [...] Dabei ist ganz abgesehen davon, daß man dazu neigt, Attribute ausschließlich der Figur (oder ihren Teilen und Momenten) beizulegen. Denn dann handelt es sich ja um Eigenschaften, wie sie oben [...] gemeint waren und, besonders unter dem Namen ‘Gestalt- und Teileigenschaften’, weiter unten [...] noch ausführlich zu besprechen sein werden.”

¹³²Cf. Pinna [2011b: 384–5].

the irreversible hierarchical framework of the emergence and demergence of perceptual and, in consequence, metonymical part-whole structures. In other words, how does this special moment of reversal appear to the perceiver? What are the experiential effects such a process of Gestalt shifting causes in the perceiver? And how can multistable, reversible phenomena be applied to the generation of meaning in dynamic, interdependent part-whole structures?

For the description of these perceptual characteristics in which figure-ground reversals appear to us, it is promising to begin with Rubin's original text. Therein, he attributes to the perception of figure-ground reversals one important quality: a moment of surprise, surprise about a new perspective towards the perceptible world, or a new facet of objects the perceptible world opens up, even if we are familiar with the objects we look at.¹³³ This moment of surprise is not unjustified, because according to Rubin, figures entail a much higher degree both of form,¹³⁴ reality,¹³⁵ and perceptual meaning,¹³⁶ which is why a figure-ground reversal has the capacity to reveal or even create a previously unnoticed or even non-existent aspect of form, reality and meaning. All at once we recognize that one and the same arrangement of stimuli actually comprises two or more meaningful percepts. We could say that through the occurrence of a visual figure-ground reversal, the reality and the visual meaning of the experienced object becomes 'more' and richer than it had been prior to the reversal.¹³⁷ The moment of surprise is created because it does not fully lie in the power of our *attention* to make a figure switch into the ground or vice versa.¹³⁸ Rather more or less suddenly, the perceived world happens to be richer in meaning than it seemed beforehand.

Furthermore, the experience of this reversal is not reducible to the spatial perspective of

¹³³“Es ist mir sehr viele Male passiert, wenn ich eine sinnlose Figur betrachte und z. B. zuerst das eingeschlossene Feld als Figur und das umschließende als Grund erlebe, und mir dann vornehme, das umschließende Feld als Figur zu erleben, daß die erlebte Figur, die dann entsteht, mich völlig überrascht. Nicht nur, daß ich mir nicht vorgestellt habe, daß das Feld, als Figur erlebt, in allen Einzelheiten genau so wirken würde, sondern ich habe überhaupt keine Ahnung gehabt, wie es als Figur aussehen würde. [...] Es geschieht wiederholt, wenn ich mir Teppiche und ähnliche gemusterte Gegenstände ansehe, die ich Jahre hindurch vor Auge gehabt habe, und die ich gut kenne, daß das System von Feldern, das gewöhnlich Grund gewesen ist, sich als Figur oder Muster einfindet und überraschend neu anmutet.” [Rubin 1921: 31]. Cf. on this point in Rubin also Pind [2014: 95; 102].

¹³⁴Cf. id. [36].

¹³⁵Cf. id. [45].

¹³⁶Cf. id. [74].

¹³⁷“Es geschieht etwas mit dem Grunde, wenn er dazu übergeht, Figur zu werden; man hat hier, wo es langsam geht, in besonderem Grade den Eindruck, daß es etwas Neues ist, das zu dem Felde hinzukommt, welches Grund war, und nun dazu übergeht, Figur zu werden; der erlebte Gegenstand, der sich auf dieses Feld bezieht, wird, indem er gleichzeitig wechselt, bereichert. Dieser Eindruck wird aber auch deutlich, wo sich das Feld, welches früher Grund war, plötzlich als Figur einfindet.” [id.: 36]

¹³⁸“Vieles von dem, was man gewöhnlich der Aufmerksamkeit zuschreibt, wird hierdurch teils als Eigenschaft der erlebten Gegenstände, teils als gesetzmäßige Verbindung zwischen erlebten Gegenständen aufzufassen sein. Der Versuch, der gemacht worden ist, läuft also darauf hinaus, zu vermeiden, mit dem Begriff der Aufmerksamkeit und statt dessen mit dem Erlebten selbst zu arbeiten.” [id.: ix] After Rubin, the role of attention for figure-ground perception has been extensively studied. In contrast to Rubin, Leopold et al. [1999] for example accentuate the role of attention for the perception of ambiguous objects, whereas Koffka [1922: 562] observes “that the figure-ground distinction cannot be identified with a mere difference of the attention-level.” In their recent review of Gestalt research on this topic, Wagemans et al. [2012a: 31] come to the conclusion that “although figure-ground perception can be affected by focused attention, there is evidence that it can *also* occur preattentively.” For the purposes of the present project, the role of subjective attention and intention for figure-ground reversals is less relevant. I am rather interested in the fact that *there is* such a phenomenon, and, in particular, how the dynamic aspect of this phenomenon might be applied to *de*-hierarchize or better continually *re*-hierarchize a part-whole structure.

the observer, but is always dependent on the constitution of the experienced object itself. This becomes clear in the distinction between background and ground. Rubin explains that a background is always *spatially behind* the figure (e.g. the sky is *behind* the house¹³⁹), which is accordingly in the foreground, and if the observer were to move around the figure such that it disappears from their field of vision, then the background would turn into a figure. A background thus involves an objective difference in depth and its being a background depends on our spatial perspective and location. A ground, however, can be at the same level of depth as the figure and therefore does not change its function of ground merely by a relocation of our spatial point of view.¹⁴⁰ In Figure 7-4, for example, the faces and the goblet display an identical spatial depth. Also, Rubin goes on to argue, even if one object is spatially *behind* another one, it is possible to experience the rear object and not the front object as figure, for example when we cut a hole into a piece of cardboard and place it on another piece of cardboard with a different color. Then normally we perceive the detail of the latter as figure and the frame of the former as ground.¹⁴¹ Since the gerund *grounding* has a different connotation, I think we can use *backgrounding* for the turning into a *ground* (not into a background) of a figure without creating confusion.

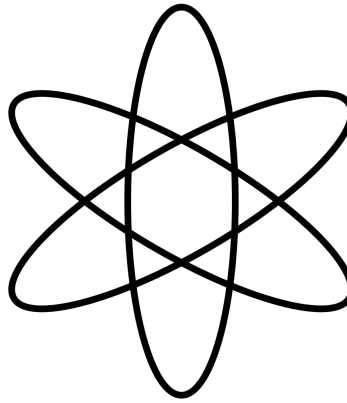


Figure 7-5: *Atom Symbol*¹⁴²

Understanding ‘ground’ in this way establishes the intended analogy between figure-ground reversals and PWO, because both refer to one and the same arrangement of stimuli (which, for example, in figure 7-4 is perceivable as a goblet *or* as faces), whereas the pair foreground-background would refer to two spatially different arrangements of stimuli (e.g. a sky *and* a house). Only the former involves perceptual ambiguity, which is, however, as Rubin states, not a strict and exclusive either/or relation, but rather an experiential state of perception in between either/or and both/and. Let me try to explain this using the example of the atom symbol [Figure 7-5]. The whole figure is an experiential object *O*, and it consists of three ovals *A*, *B*, and *C*. Each of these ovals can function as figure *f* or as ground *g*. This is the case in a 2-dimensional perception of *O* when one oval is, as *f*, in front of the other two, which are, as *g*,

¹³⁹Of course, the sky is objectively *above* the house. But if we direct our gaze to the contour of the house and judge from our visual awareness, then the sky appears as being behind it.

¹⁴⁰Cf. Rubin [1921: 4].

¹⁴¹Cf. [id.: 60].

¹⁴²This figure is reproduced from https://upload.wikimedia.org/wikipedia/commons/thumb/8/84/Popular_culture_atom_symbol.svg/906px-Popular_culture_atom_symbol.svg.png – last visited on 7 December 2019.

behind f . It is equally the case in a 3-dimensional perception when we see the ovals as circles of which one (f) surrounds the other two (g). In both cases, O is in a state of constant reversal, which means that A , B , and C constantly alternate in their function as figure and ground. But what is more, in the course of the reversals, each oval/circle still keeps something of its former and future character as f or g , even if, in the moment of perception, it is not f or g . Through carrying its ‘history’ and its ‘future’ as f or g with it into its now being g or f , each part slightly appears in a ‘not directly intuitive’ (*nicht direkt anschaulich*) manner as g although it clearly stands out as f , or as f although it is actually backgrounded.¹⁴³ Thus, as Pind [2014: 96] comments on this passage in Rubin, “it is possible that when a shape, which is experienced as figure, recedes and becomes ground, it may yet keep something of the characteristics of the figure.” Also, as Ehrenstein accentuates in this regard, we cannot but anticipate appearances of O that are, in the present moment, only implicitly given in perception.¹⁴⁴

Rubin also observes that the more often we switch either g into f or f into g , the clearer both of them stand out *simultaneously* as f .¹⁴⁵ Thus, “it may even happen that both areas of the stimulus are simultaneously experienced as figure.” [id.] This may have to do with the fact that, as Köhler [1940: 69] notices, “as the time of observation increases, the changes tend to follow each other more rapidly.” In the course of its constant state of reversing back and forth, the nature of O is thus not only permanently changing, but it also entails the conceptual paradoxes that f can somehow be experienced as being *in* g and vice versa and even that, after prolonged inspection of O , both A , B , and C can function as f at the same time. In the dynamic logic of figure-ground perception of an ambiguous object like Figure 7-5, but also figures 7-2, 7-3 and 7-4, a clear-cut binary division of g and f as separable entities is thus inapplicable. This is why these attributes of figure-ground reversals have to be distinguished from the more extensively studied reasons for why and how f stands out as f compared to g , because to determine the latter, we have to ‘freeze’ the actual motion involved in the intertwining (of the) moments of O . In a figure like 7-5, we thus not only deal with several different percepts that *exclude* each other, but also with percepts that somehow transcend their visible nature as f or g by implicitly yet noticeably *including* aspects of their complementary co-percept g or f . Analogously, and this is the connecting factor I want to stress, in PWO we encounter the same logical incoherence that

¹⁴³“Zweitens kann es mitunter störend wirken, daß es nicht völlig gelingt, das Feld, welches vorher Figur war, als Grund zu erleben; es behält zu einem gewissen Grade den Figurcharakter bei. Es kann außerdem ein nicht direkt anschaulich gegebenes Wissen darüber vorhanden sein, wie das Feld als Figur aussieht, ein Wissen, welches nicht leicht von dem direkt anschaulich Gegebenen auseinanderzuhalten ist; aber selbst hier, wo somit bei dem Übergang zwischen dem, was man in bezug auf das Feld, welches zuerst Figur war und darauf als Grund erlebt werden soll, der Unterschied gering erscheinen mag, wird bei dem anderen Feld, wo der Uebergang in entgegengesetzter Richtung vor sich geht, der Unterschied ansehnlicher sein.” [id.: 33]

¹⁴⁴“Das Vorstellungsvermögen, das die Vorwegnahme späterer Figurinhalte der Wahrnehmung ermöglicht, ist eine letzte, nicht weiter zurückführbare, so hinzunehmende Grundtatsache unseres Seins.” [Ehrenstein 1954: 323]

¹⁴⁵“Wenn man dagegen, um sich sein Urteil recht klar zu machen, mehrere Male zwischen der einen und der anderen Art, die vorliegende Figur aufzufassen hin und her geht, kann dies dahin führen, daß das umschlossene und das umschließende Feld allmählich simultan oder ungefähr simultan und ungefähr in gleich hohem Grade als Figur hervortreten; dies ist eine Folge davon, daß man solange mit der Figur gearbeitet hat, und besagt, daß man jetzt mit anderen erlebten Gegenständen als ursprünglich zu tun hat. Man muß es sich hier klarmachen, daß das neue Urteil, zu dem man eventuell kommt, das Urteil, zu dem man zuerst kam, als man sich mit der Figur zu arbeiten anschickte, nicht aufhebt, denn die beiden Urteile beziehen sich auf verschiedene erlebte Gegenstände.” [Rubin 1921: 33]

the whole is both distinguishable from and comprised in one or more of its parts.¹⁴⁶ The nature of such intertwined relations can be described as a kind of ontological ‘glitch’ in perception, a glitch that is indeterminable when the bidirectional process of oscillating is made static in order to analyze the properties of one side and compare them to the properties of the other.

Whereas in the course of reversing, figure and ground are distinguishable yet incomparable because they are in a constant process of switching, which results in two or more different and alternating percepts, we can indeed compare figure and ground when the process of reversing is inactive or when the nature of the experienced object is not or hardly ambiguous. Then it is possible to determine the particular character of a figure and the particular character of a ground on the basis of their difference,¹⁴⁷ and definitions of the figure-ground phenomenon such as the recent one given by Peterson [2015: 259] are to the point: “When two regions of the visual input share a border, visual processes determine whether one of them has a definite shape bounded by the shared border. In this case, the shaped region is perceived as the figure (the object) and the border is perceived as its bounding contour. The region on the opposite side of the border appears to simply continue behind the figure/object; it is perceived as a shapeless *ground* to the figure/object at their shared border.” This definition states that in comparison to the shaped and bordered figure, the ground appears as shapeless and boundless. These are, however, not the only characteristics of figure and ground in their mode of being (temporarily) irreversible. Already Rubin himself discusses several other characteristics, which Spillmann [2012: 194] summarizes as follows:

“According to Rubin [...], figures are characterized as follows: They have object character (represent a thing), adhere or cling together (are compact), appear closer to the observer (even on a two-dimensional surface), are surrounded by a contour (that is unilateral), possess a form (often convex and symmetrical), and are superimposed onto a background, which they partially occlude. In comparison, the ground or background has a ‘loose’ structure (Rubin’s ‘substance’); it appears further away than the figure, is partially occluded by the figure and continues behind it; it is shapeless (e.g., the sky between the clouds) and larger than the figure. The figure is perceptually richer than the ground, has a bounded surface, and evokes connotations, whereas the ground is space-filling, poorly presented in awareness, and often not remembered. Figures represent objects with which we interact while the ground is ‘stuff.’ The distinction between figure and ground is not given in the physical stimulus; it is an achievement of the brain. In order for us to perceive figures, stimuli need to differ in brightness, color, texture, depth, or motion from their surround.”¹⁴⁸

This is one way to approach the figure-ground phenomenon: to determine what distinguishes figure and ground. Mostly, this involves a hierarchy in which the figure is, analogous to the

¹⁴⁶Cf. subsections 2.2.7 and 4.3.2.

¹⁴⁷Koffka [1922: 566], for example, states that there is an “essential difference between the figure and ground phenomena. This difference is fundamental and the figure-ground structure must therefore be considered one of the most primitive of all structures.”

¹⁴⁸Cf. Pind [2014: 90–109] for a more in-depth discussion of these characteristics in Rubin’s original analysis of the figure-ground phenomenon.

traditional conception of Gestalt as perceptible whole,¹⁴⁹ superior to and thus higher than the ground. Even if the insight emerges that figure and ground are actually interdependent, in many cases the ground then only *serves* as a replaceable and characterless bottom *for* the perceptually superior figure to appear, like the many are supposed to do for the One in a one-sidedly dependent part-whole structure. Koffka [1922: 566–7] writes in this respect that although there is a “superiority of the figure-phenomenon over the ground-phenomenon [...], the ground has a very important function of its own; it serves as a general level (*niveau*) upon which the figure appears. Now figure and ground form a structure, consequently the former cannot be independent of the latter.” The superiority of the figure in such a hierarchical figure-ground relation consists in the ground’s exclusion from perceptual meaning, which is only assigned to what appears as figure. Only after the figure is imbued with meaning, or only after meaning emerges from the figure but not from the ground, do we relate the figure to its ground and analyze the latter’s determining influence on the former. As Škilters [2011: 285] recently describes it: “What happens when we assign meaning during perceptual processing? We build structures in that we segment the perceptual material we are confronted with: we select certain important/determining parts (referred to as *figures*) from those supporting/backgrounding (referred to as *grounds*) the important/determining ones. [...] As soon as we assign meaning to something, we generate functional dependencies.” But this is not the kind of hierarchy I seek, because it assigns meaning only to what stands higher in the hierarchy (here: the figure, above: the whole) instead of to the ontogenesis and reversibility of the hierarchy itself. In lieu of analytically discriminating figure and ground by concentrating on their unambiguous and stable appearances within a field of perception, however, we can also try to get a better idea of their intertwined and dynamic nature in ambiguous patterns and to suggest from there an alternative kind of meaning-generating hierarchy that is valid for ambiguous part-whole relations (PWO) as well. It has to be added that such a ‘letting-go’ of the static state in which figure and ground are clearly specifiable involves a conceptual challenge, because – as Arnheim [2004: 286–7] in this context expresses it in only slightly exaggerated terms – it necessitates a higher complexity in which we perceive and therefore conceive the world: “Great pleasure goes with this animation of a formerly static concept. But the change to a model of higher complexity also arouses apprehension. The neat circumscription of objects – expressed in drawings by a determined contour line – must be abandoned, and the timeless stability of concepts, cherished by the thinker, no longer has its counterpart in the world these concepts describe.”

7.4.2 Rethinking Multistability: Towards an Interactive Realism

To do so, we have to rethink three major assumptions which are held to be fundamental for the figure-ground phenomenon. The first assumption concerns the just-discussed interdependence of figure and ground. On the one hand, we can think of this interdependence in the standard way by classifying the ground as a cause for the figure to appear, and the figure subsequently as a cause for the ground to – in a certain sense – disappear. Such a causal interdependence would establish a hierarchy in which the figure, although or because it is caused by the ground, stands higher through its being the only meaningful and the more determinative side. On the other hand, we could classify the figure-ground interdependence as reciprocal from the outset.

¹⁴⁹Cf. section 6.3.

Instead of a causal chain in which the downward causation by the figure that has emerged from the already existing ground takes place *after* the upward causation of the figure by the ground, we can understand figure-ground interdependence as a reciprocal causation. In a reciprocal causation, there is not a succession in which *A* causes *B* and *B* in turn causes (in the sense of *determines* the nature of) *A*, but a simultaneity in which *A* and *B* cause and are the effect of each other without one doing it first and the other following.¹⁵⁰

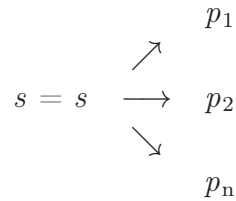
In such a reciprocally causal relation, it would be implausible to attribute meaning only to one side, viz. the figure, where it is in fact the synchronous interaction of both sides which is meaningful and which thus distributes meaning to *A* and *B* alike. In this alternative to the standard view, meaning would thus be inherent to and therefore accessible in both figure and ground and be perceived as such, which has also been confirmed in a recent experiment by Peterson et al. on the cognitive processing of non-ambiguous figure-ground phenomena.¹⁵¹ What is valid in this regard for non-ambiguous patterns should be even more applicable in the case of reversible figures. Furthermore, this result of rethinking figure-ground interdependence as reciprocal causation corresponds better with Rubin's insight that, in figure-ground reversals, a figure that was a ground before or a ground that was a figure still keeps something of its previous character. In being simultaneously an effect of its opposite side and its cause, a figure/ground is more closely connected to, i.e. more intertwined with its opposite side than in just being either its effect or its cause. I see no reason why this reciprocal causation should not be valid for perceptible part-whole relations as well, since we have seen that the splitting or analyzing into parts reveals the perceptual meanings of such a structure no less than the merging or synthesizing into its rather holistic aspects.

The second assumption to rethink is related to the nature of the stimulus giving rise to ambiguous perceptions. It is often said that when we deal with ambiguous figure-ground phenomena, then we have one self-identical arrangement of stimuli (for instance three 2-dimensional ovals within a circle in Figure 7-5). This means that there is one stable and in itself 'meaningless' stimulus pattern which is perceptible in two or more different meaningful ways. As Attneave [1971: 63] puts it, "[w]hen we look steadily at a picture or a geometric figure, the information received by the retina of the eye is relatively constant and what the brain perceives usually does not change. If the figure we are perceiving happens to be an ambiguous figure, what the brain perceives may change swiftly without any change in the message it is perceiving from the eye. [...] An ambiguous figure provides the viewer with an input for which there

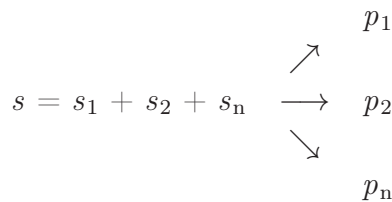
¹⁵⁰Cf. Revilla [2014: 5408] on the idea of reciprocal causation.

¹⁵¹The authors summarize their experiment as follows: "Figure-ground perception entails inhibitory competition between potential objects suggested on opposite sides of a border. The winner is perceived as the figure; the loser is suppressed and perceived as a shapeless ground. We investigated whether the meaning of an object that ultimately loses the competition for figural status is activated prior to figure assignment, and, if so, whether it is suppressed. Participants categorized words as naming natural or artificial objects. The words followed novel silhouettes with portions of real-world objects suggested along the outside of their vertical borders. The silhouettes were designed so that the inside would be seen as the figure, the outside would be seen as a shapeless ground, and participants would be unaware of the real-world objects that lost the competition for figural status. Participants categorized words faster when the real-world object suggested on the groundside of the preceding silhouette was from the same versus a different category. Thus, the meaning of real-world objects that are suggested in the visual input, but are not ultimately perceived, is accessed (but not suppressed) in the course of perceptual organization. Our results show that meaning is not secondary in perception as in the traditional Gestalt view and in current feedforward models. Instead, it can be said to be primary in that it seems to be accessed in the first pass of processing." [Peterson et al. 2012: 309–10]

are two or more possible representations that are quite different and about equally good, by whatever criteria the perceptual system employs.” To determine a stimulus s as ambiguous then implies that whereas it is itself homogeneous, it allows for a heterogeneity of perceptions p_{1-n} , which are possible representations of the stimulus pattern in the brain:



This is what it means to speak of multistability in perception: an in itself unchanging, i.e. stable stimulus s is perceived or cognitively represented as giving rise to a multiplicity of realizations (p_1, p_2, p_n). In an ambiguous figure-ground phenomenon, the perceptions might change, but the stimulus stays stable. Accordingly, Stadler et al. [1994: 222] claim that “[t]he characteristic properties of these patterns are that there is a constant stimulus giving the possibility to attribute various meanings to the related perceptual structure.” This means that there is a “stability-instability transition” [id.] from stimulus to percept(s). In a non-ambiguous figure-ground phenomenon, there is also only one stable percept corresponding to one stable stimulus pattern. Thus in both ambiguous and non-ambiguous figure-ground phenomena, the stimulus pattern is regarded as self-identical and as what may be called ‘uni-stable’, with the consequence that the actual meaning of what is perceived is only attributed to the percept *after* it has been cognitively formed. Put simply, the external world of stimuli is always stable and devoid of perceptual meaning, whereas the perceived world can be multistable and is attributable with perceptual meanings. Such a position would enable, for example, what Stadler et al. defend in this context as a ‘radical constructivistic view’ of meaning.¹⁵² This position seems to be shared by Koenderink [2015a: 46] as well, for whom “[t]he phenomenon of figure-ground reversal proves that this is a purely mental phenomenon, there being no physics of the matter.” However, what would the alternative to such a meaning-constructivism look like for the case of ambiguous figure-ground phenomena? Would it not be possible to locate meaningful multistability already in the domain of the stimulus itself such that the relevant aspects of the external world not only appear as multistable when perceived, but already contain in themselves the simultaneity of s as consisting of $s_1 + s_2 + s_n$, of which we can perceive $p_1 / p_2 / p_n$ only in succession?



Such an alternative would have the not only philosophically important advantage of avoiding a strict dualism between ‘meaningless’ stimulus and ‘meaningful’ perception, which in the end

¹⁵²“This philosophical approach claims that no semantic information enters the brain or the cognitive system from the outside. From that it follows that meaning must be created in the system itself by self-reference. Therefore it is not possible to refer from cognitive objects to real objects. Real objects surely are the cause of certain stimulus patterns for the sensory systems, but these patterns are, as we have argued, always ambiguous. So the external stimulus patterns are only boundary conditions that stimulate the self-organizing activity of the brain.” [Stadler et al. 1995: 12–3]

amounts to nothing but a Cartesian dualism between world and mind. The rejection of such a dualism would, for example, solve the mystery of Benussi's 'process x ' that connects a constant complex of stimuli and the multiple perceptions of it.¹⁵³ This alternative would also justify the phenomenological experience that our different perceptions of an ambiguous object O as such or such does not exhaust the ways in which O can be perceived due to our cognitive limitations, but keeps open a perhaps inexhaustible range of possibilities in which O could also be identified as meaningful. Furthermore, with this alternative it would be possible to build on Köhler's hypotheses concerning the existence of figure-ground relations in the pre-perceptual, physical and chemical levels of reality.¹⁵⁴ Whereas in the classical view, the possibilities of perception exceed what is given as stimulus, in this alternative view it is rather the other way round: Perceived meanings might be just a fraction of the totality of perceptible (and perhaps imperceptible) meanings. Hence what Rubin discovers as a moment of 'surprise' that sets in when an ambiguous object suddenly reverses is easier to explain, because we can only be surprised when something that is external to us shows itself in a new light, not by a switch in what has already been cognitively processed and is thus internal. Furthermore, by assuming that multiple meanings are inherent in the stimulus, our varying interpretations of the stimulus would have a justified foundation that precludes arbitrariness ('because O is ambiguous, it has no meaning in itself and thus can mean *anything*') yet allows for plurivalent interpretations ('because O is ambiguous, it has certain meanings and thus more than one but not *any* interpretation of it is valid').¹⁵⁵ All in all, this alternative to the standard stimulus-percept relationship in ambiguous figure-ground phenomena calls for a certain realism and pluralism of perceptual meanings as being external yet (partly) perceptible in the first place.

The range of phenomena to which such a realism applies would be insignificantly small, however, if it only concerned ambiguous figure-ground phenomena. In order to suggest an appropriate kind of realism of multistability, it is therefore necessary to extend the range of the latter and to locate it beyond figure-ground relations. This question about the scope of reversibility is the third aspect which I suggest rethinking, because if perceptible ambiguity

¹⁵³"Da bei einem *konstanten* Komplexe von Sinneseindrücken Vorstellungen von ganz *verschiedenen* Gegenständen erweckt werden können, und zwar in der Art, daß diese Gegenstände nicht durch Assoziationen und auch nicht durch anschauungsfreie Gedanken an Verhältnisse oder Sachverhältnisse, sondern durch direkte Anschauung uns vorgehalten werden, so ist es klar, daß diese Vorstellungen keineswegs in der Weise durch die Tätigkeit eines Sinnesorganes veranlaßt werden können, wie durch eine Netzhautreizung bestimmter Art die Vorstellung einer bestimmten Farbe hervorgerufen wird. Die Leistungsfähigkeit der Sinne reicht nicht so weit. Es muß also zwischen den Sinneseindrücken, die konstant bleiben, und den Vorstellungen von Figuren, welche voneinander verschieden ausfallen können, noch ein Vorgang x seinen Platz finden, der, je nachdem er sich so oder so abspielt, unter und *trotz* der Voraussetzung einander gleicher, konstanter Sinneseindrücke zu Vorstellungen von ganz verschiedenen Gegenständen führt." [Benussi 2002: 345]

¹⁵⁴Cf. on this point Ley [1996: 202]: "So entwickelt Köhler für den einfachen Fall eines Figur-Grund-Verhältnisses, wie es etwa bei der Wahrnehmung eines weißen Kreises auf grauem Grund gegeben ist, ein hypothetisches Modell, nach dem die Ionenkonzentration in den Sinneszellen der Netzhaut bereits selbst nach Figur-Grund-Prinzipien organisiert sein könnte. Geht man in diesem Fall nämlich davon aus, daß diese Ionenkonzentration nach Maßgabe der Reizvorlage für größere Gebiete der Sinnesfläche jeweils höhere bzw. niedrigere Werte annimmt, dann ließe sich zwischen den Bereichen höherer und niedrigerer Konzentration ein charakteristisches Spannungsgefälle, ein 'Potentialsprung' verzeichnen, der genau mit der wahrgenommenen Grenze zwischen Figur und Grund zusammenfallen muß: Jeder Kontur im Wahrnehmungsfeld entspricht ein Potentialsprung in der Nervensubstanz."

¹⁵⁵This argument is derived from Piccolino et al.'s [2006a: 861] characterization of ambiguity: "Perceptual ambiguity refers to the alternation over time between differing interpretations of a pattern."

were to be restricted to a certain kind of figure-ground relation alone, then it would certainly be unjustified to apply the dynamic hierarchy inherent to reversible structures to interdependent part-whole relations. Of course, it has always been unquestionable that the phenomenon of reversibility comprises not only abstract or figurative images in which there are shifts from figure into ground and vice versa. Perceptual ambiguity has also been attributed to figurative as well as abstract images such as the often used examples of the Necker cube (Figure 7-2 above), ‘Duck-Rabbit’ (Figure 7-3 above), or ‘My Wife and My Mother-in-Law’ (Figure 7-6 below). In such reversible images, we can perceive one of at least two perceptual meanings or geometrical perspectives offered by the respective arrangement of stimuli, without there being a figure-ground switch.¹⁵⁶



Figure 7-6: *My Wife and My Mother-in-Law*¹⁵⁷

If rather artistically and artificially created, illusory images like these were the only instances in which ambiguous objects occur, however, then Attneave [1971: 64] would be right in stating that “[u]nder normal conditions many factors cooperate to determine the figure-ground relationship, and ambiguity is rare.” In the same vein, Kanizsa et al. [1995: 48] argue that the peculiarity of reversible figures “lies in the fact that they are very rare in ordinary everyday perception. One could claim that they are not to be found in nature, but this would be inaccurate: The very moment they enter an observer’s visual field they gain full status of visual objects. The frequency of this event occurring is irrelevant.” For Metzger [2006: 13], this rare frequency is even relevant, because, as he sees it, “[p]eople who are particularly sensitive can be driven crazy by such reversible figures. Fortunately for our peace of mind, reversible patterns rarely occur in natural environments.” As rare examples, he refers to zebras and “carpet, tile, or wallpaper patterns that drive you crazy [...]” [id.] Furthermore, since the unequivocal stability of a percept/a figure hinges on its being determined by Gestalt laws of grouping,¹⁵⁸ above all the principle of *Prägnanz*, and since most Gestalt theorists seem to base their hypotheses on the observation that “there is a lawful *tendency to stability* in the perceptual field” [Luccio 2003: 377], it is no surprise that perceptual ambiguity seems to occur only in rare cases. All of this suggests that – even if reversible images are classifiable into several kinds¹⁵⁹ and even if the

¹⁵⁶“Some ambiguous shapes do not involve a reversal of figure and ground. Consequently, the part boundaries defined by minima of curvature do not move when these figures change interpretations.” [Hoffman et al. 1984: 83]

¹⁵⁷Reproduced from https://upload.wikimedia.org/wikipedia/commons/5/5f/My_Wife_and_My_Mother-In-Law_%28Hill%29.svg – last visited on 7 December 2019.

¹⁵⁸“If none of the Gestalt laws is decisive [...], the figure vacillates back and forth [...] and never comes to rest.” [Metzger 2006: 13].

¹⁵⁹Stadler et al. [1995: 7–6], for example, differentiate seven types of ambiguous patterns in perception, including

phenomenon of reversibility can also be discovered in the acoustical sphere¹⁶⁰ – the factual rarity of this phenomenon seems to make it ineligible for a transformation of its dynamic processuality into the more capacious ontological region of interdependent part-whole relations.

On the other hand, for some scholars the phenomenon of multistability is less rare than one might assume by concentrating only on well-known visual illusions and ambiguous figure-ground phenomena. On the contrary, as Stadler et al. [1995: 6] indicate, “[m]ultistability is a phenomenon that exists on all levels of matter and organization.” To illustrate this, the authors list examples from fields as diverse as physics (Bénard instability, optical bistability), chemistry (bistable molecules), biology (changes of stable states in brain processes), animal and human thinking (restructuring in problem-solving), language (multiple meanings of words and sentences), social processes (predominance of animal species) and developments (social revolutions), as well as scientific progress (Kuhnian paradigm shifts). To this we can also add, with Abrantes, the high level of interpretative ambiguity inherent to artworks.¹⁶¹ Such an extension of the range to which multistability applies would credit this phenomenon with a certain universality that reaches way beyond special and rare instances of human perception. If we just consider concrete cases in which there are alternations between stable states, mediated by processes of destabilization as restabilization, then indeed it becomes plausible that the phenomenon of multistability is more or less omnipresent, even in everyday situations. There are, for example, multiple stable states due to occurring reversals (temporary instabilities) in partnerships, career plans, faith, emotions, moods, health, opinions, knowledge, perspectives on events in life, etc. Not everything is possible for everybody in these areas, but for every person and within each of these exemplary domains, there is a finite amount of stable and approximately equally meaningful states that can, and in fact do, alternate, sometimes unexpectedly and often revealing unforeseen aspects.

Furthermore, it can be argued that even within the comparably smaller domain of empirical perception, we constantly deal with ambiguities which are, however, often overlooked by the fact that we seem to perceive a stable world governed by Gestalt laws of order and stability. Zimmer [1995: 99] states accordingly that “multistability is not confined to experimental settings but a pervasive, albeit inconspicuous phenomenon also in complex scenes and events.” He justifies this claim by arguing that there are principally two complementary processes in perception: “that of stability and its tendency towards simple forms [...] and that of singularity which specifies uniquely the position of the viewer relative to the perceived objects.” [id.: 102] To use an example of my own, when we perceive an imperfect geometrical form, for example a book with slightly rounded corners the shape of which is therefore *almost* a cuboid, then the tendency towards stability lets us perceive a perfectly cuboid-shaped book with orthogonal

‘fluctuations of complex patterns’ (e.g. Figure 7-5), ‘figure-ground tristability’, ‘multistability of symmetry axes’, ‘multistability of 2-dimensional projections of 3-dimensional bodies’ (e.g. the Necker cube in Figure 7-2), ‘Multistability of actually 3-dimensional objects’, ‘Multistability of motion direction in apparent movement’, and ‘Multistability of meaning attribution’ (e.g. ‘Duck-Rabbit’ in Figure 7-3 and ‘Old-Young Woman’ in Figure 7-6).

¹⁶⁰Cf. [id.: 8].

¹⁶¹“One further aspect that contributes to the slower mode of aesthetic perception is the high degree of ambiguity that pertains to artistic works. Ambiguity in art is not so much the vagueness or uncertainty about what is represented, as it is the coexistence of various possibilities within one representation. Ambiguity is perhaps best conveyed by abstract forms, but it can also be achieved by subtle manipulations at the level of gestalt perception, such as figure and ground shifts.” [Abrantes 2008: 185]

corners (*Prägnanztendenz*). The tendency of singularity, however, has a strong influence on this stable perception, because it takes the perspective of the observer into account. Depending on the singular perspective, the book can take several equally stable shapes: if it lies in front of me on the table, it might indeed appear as stable in the sense of cuboid-shaped, but if I only see its surface (the cover), then I perceive a stable 2-dimensional rectangle, and if I take it in my hands and look straight at a corner such that the cover and the back cover are out of sight, then I see the book as an irregular hexagon. All of these percepts are stable, but they are also singular because of the unique perspective in which they are seen. Having more than one perspective, which is the general case in everyday perception and which results precisely from perceiving the relationship between perceived and perceiver as contingent, thus implies that objects can appear as multistable and thus imbued with multiple perceptual meanings. Conversely, if – unlike for instance in a Cubist painting – only one perspective with one single vanishing point is possible, then the amount of perceptual meanings is comparably diminished. For example, “in 2-dimensional drawings the strength of the spatial impression is not maximal for drawings that obey perfectly the rules of perspective but for those which form a compromise between stability of partial forms and perspective distortions.” [Zimmer 1991: 277–8]

What these examples and the complementarity of the tendencies towards stability and singularity amount to is neither a simple naive realism of perceptible meanings, nor an idealistic stance according to which perceptible meanings only arise and exist in our brains. Instead, Zimmer offers the interesting alternative of an ‘Interactive Realism’, which strongly resembles Johnson’s epistemological and implicitly also ontological framework of an ‘Embodied Realism’ according to which the basic structures of language and abstract thinking are derivable from our embodied being in the world.¹⁶² After having observed the effect of multiple perspectives on the interpretations of paintings, Zimmer concludes that “[t]he analysis of multistability so far supports the theoretical position that in space perception bottom-up and top-down processes interact.” This means that Interactive Realism could indeed form a basis for classifying the phenomenon of multistability as an indicator that leads us beyond a strict subject-object or brain-environment division. On the one hand, it presupposes a fundamental indeterminacy of reality such that multiple meanings are actualizable for a *prima facie* self-identical stimulus configuration. On the other hand, it is only in intentionally interacting with the external world that one or more meanings indeed become actualized and therefore come into existence, as a change of sign from real latency to real actuality. In other words, the active and reflected-upon perspective in which we approach (something in) reality presupposes the existence of (something in) reality, but it is only through this interaction that we discover and thus activate or ‘realize’ latent aspects of reality which we had not presupposed because we were not aware of them.¹⁶³

What is more and what I find innovative about this stance is that it is exactly this multiple

¹⁶²Cf. section 4.1.

¹⁶³In another, German article, Zimmer [2011: 38] explains this as follows: “Wie in den meisten Wahrnehmungstheorien explizit oder implizit postuliert wird, befähigt Wahrnehmung den Wahrnehmenden in der Wirklichkeit zu handeln. Damit aber dieses Handeln erfolgreich ist, müssen ihm Erwartungen vorausgegangen sein, wie denn die Wirklichkeit sein wird, wenn in sie handelnd eingegriffen worden ist. Diese Erwartungen oder Hypothesen können aber auch durchaus dazu verwendet werden, um durch Handeln neue Erkenntnisse über die Wirklichkeit zu erhalten. Dies ist nichts anderes als die experimentelle Methodik der Naturwissenschaft, die sich aber auch im täglichen Leben findet.”

actualization of perceptible meanings via their being perceived which is an act belonging to and being constitutive for reality itself. As Zimmer [1995: 109] sees it, “[m]ultistability can be regarded as a paradigmatic approach to the question how the order in the phenomenal world is related to that of the physical world and by doing this, one arrives at a position which might be termed Interactive Realism; a position claiming that for the perceiver the order of the world which is in the mind is a constituting element of this world itself.” The interdependencies inherent to ambiguous figure-ground phenomena and other seemingly illusory visual structures are thus mirrored in a realist position that postulates an interdependency between perceptible reality and perceiving subject. Whereas the latter’s reflection on the contingent singularity of its perspective and its intentionality towards the external world establishes perceptual meanings, which more often than not are multiply realizable, “the perceptual mechanisms also have evolved under the constraints of the physical world.” [id.: 110] Such constraints open up, analogous to the finite number of image schemata in Johnson,¹⁶⁴ an internally indeterminate yet externally limited domain of perceptible meanings for every stimulus configuration. Thus while there are mostly multiple, more or less equally stable meanings, these meanings are neither arbitrary nor endless.¹⁶⁵ What Zimmer’s Interactive Realism entails is therefore, in my opinion, an epistemological as well as ontological rethinking of the process on which multistable, perceptible meanings rely: a process which is broader in scope than standard reductions of ambiguity to rare instances, because it is anchored in our interactions with the world around us and the (in my opinion not necessarily self-identical) stimulus parts/wholes it offers. It is an Interactive Realism of this kind which seems to provide, given the similar position of Johnson’s Embodied Realism that could account for the development of the PART-WHOLE image schema¹⁶⁶ and consequently for PWO’s identification as conceptual metonymy,¹⁶⁷ a plausible framework in which perceptually meaningful, interdependent part-whole structures are implementable in the same fashion as other multistable phenomena have already been.

On the acceptance of such an Interactive Realism based on multistability in perception, which Zimmer unfortunately only delineates in general lines, we can thus, in turn, base a part-whole multistability together with the dynamic hierarchy such a structure implicates. The only additional step to do so is to relate the interdependent part-whole structure to the equally interdependent figure-ground structure and to identify the ambiguity of the latter in the nature of the former. As a result, it is not only possible to state that in PWO, a whole can either function as the figure when the parts are backgrounded or as the ground when one or more of its parts are foregrounded; it is also possible both to subsume this bidirectional process of backgrounding and foregrounding under the now more universal and reality-oriented category of multistability and therefore to apply the experiential moments attributed to multistability to PWO as well. These experiential moments could then reveal or at least hint at a kind of dynamic and reversible hierarchy the indetermination of which corresponds to the merely relative and

¹⁶⁴Cf. subsection 5.1.1.

¹⁶⁵“This indeterminacy in the relation between the physical world and the mental representation with its intentionality does not imply an anything[-]goes stance because in the cases of multistability usually only [a] small number of attractors exist [which], however, is principally unpredictable is the exact basin in which stability will be reached. That is, the physical world constrains but does not determine the actuality of the mind.” [Zimmer 1995: 135]

¹⁶⁶Cf. subsection 5.1.2.

¹⁶⁷Cf. section 5.3.

temporal yet not absolute primacy of either part(s) or whole. Apart from Rubin's experiential moment of 'surprise', which he observes to take place in figure-ground reversals,¹⁶⁸ we can add with Ehrenstein at least three additional experiences effectuated by alternations of stability.

Firstly and overlapping with Koenderink's notion of 'visual awareness'¹⁶⁹ as well as with Rubin's remarks on the intertwinement of figure and ground,¹⁷⁰ Ehrenstein claims that in our *consciousness* of a figure, the ground is always given as well, and vice versa, because both sides are inseparable and tend towards each other.¹⁷¹ He calls this a 'reciprocity of consciousness' that is defined by the awareness both of the difference between figure and ground and by its fundamental belonging-together.¹⁷² In a recent article, Hoffman [2016: 160] explicates what Ehrenstein calls 'reciprocity of consciousness' via the example of the Necker cube (Figure 7-2), which has two fore-/backgroundable sides, say *A* and *B*: "If, when you look, you see face *A* in front, then you know with a probability of one that *B* is behind, and vice versa. In other words, the states of the faces are entangled: Knowing the state of one face determines the state of the other. Thus, in the Necker cube, we have a model of superposition and entanglement in a macroscopic perception." This is the same logical paradox yet perceptible multifariousness that we discovered firstly in the case of conceptual metonymy and then in more detail as perceptual meaning and splitting/merging: A perceptible object *is and can therefore appear as* one (as figure; as whole; as one part) and many (as figure + ground; as whole + parts; as one part + other parts and/or whole) at the same time without contradiction, but instead even imbued with unforeseen perceptual meanings.

Secondly, Ehrenstein explains that reversible phenomena are capable of being differentiated according to their degree of 'reversibility'. The higher their degree of reversibility, the stronger is their 'pressure of reversing' (*Reversionsdruck*) in both directions on the observer.¹⁷³ A lesser degree of reversibility would yield a less strong, perhaps even an only one-directional pressure of reversing, such that – like in the example of a face drawn on a white ground¹⁷⁴ – only one aspect – the face – is, and typically remains, in the foreground as a figure. Similarly to an interdependent part-whole structure, there are different intensities of what we perceive as foregrounded. Whereas, for example, in entering a Protestant church one would rather experience the building and the interior design as a whole due to a lack of decorative elements, a Catholic church usually offers more details such that many parts of it stand out with more

¹⁶⁸Cf. Rubin [1921: 31] and subsection 7.4.1.

¹⁶⁹Cf. section 7.2.

¹⁷⁰Cf. subsection 7.4.1.

¹⁷¹"Es gibt in Wirklichkeit keine Figuren für sich und keine Gründe für sich, sondern nur bestimmte Figur-Grund-Zueinander, in denen Figur und Grund in engster wechselseitiger Abhängigkeit verbunden sind." [Ehrenstein 1954: 319]

¹⁷²"Figur und Grund sind voneinander abhängig und stehen zueinander in einem Verhältnis, das wir als Reziprozität der Bewußtheit benennen können. Keine Figur, deren Bewußtheitsstufe nicht mitbestimmt würde durch die Bewußtheitsstufe des Grundes, kein Grund, der so wäre, wie er ist unabhängig von den Eigenschaften und der Ausgeprägtheit der Figur. Je stärker die Figur im Bewußtsein hervortritt, desto mehr tritt der Grund zurück und umgekehrt. Die Figur-Grund-Differenzierung bedeutet in phänomenaler Hinsicht Scheidung (Differenzierung) und in funktionaler Hinsicht Zusammenfassung (engste wechselseitige Abhängigkeit) zwischen dem, was die Rolle des Grundes und dem, was die Rolle der Figur übernimmt." [Id.: 283]

¹⁷³"Daraus ergibt sich, daß alle Figur-Grund-Verhältnisse nach dem Grade der Umschlagbereitschaft (Reversibilität) geordnet werden können in einer Reihe, an deren einem Ende die willkürlich und beliebig reversiblen Muster stehen, während sich am anderen Ende diejenigen Muster befinden, deren Umschlag unmöglich oder so gut wie unmöglich ist." [id.: 289]

¹⁷⁴Cf. [id.].

‘pressure’ to be regarded than the whole. In some giant cathedrals, the overwhelming presence of the whole often even ‘pushes’ the visitor to its parts (e.g. a side-chapel, the choir-stalls, the monstrance, the catacombs) through which the all-powerful whole becomes accessible and bearable in the first place. As with figure-ground structures, however, there are no absolute thresholds in terms of reversibility.¹⁷⁵ In principle, it is never impossible to – literally as well as figuratively – see the forest for the trees and vice versa, although the ‘pressure of reversing’ might not always be equally directed to all perceptible sides.¹⁷⁶

Thirdly, there are not only degrees of a multistable object’s potential of reversibility, but also degrees in the experience of the actual movement in which such an object reverses. This movement manifests itself as a kind of ‘gradient’ (*Gefälle*), which can either be unique and complete, like in the faces-goblet illusion of Figure 7-4, or gradual and smooth, for example when adjacent surfaces with homogeneous colors alternate their figure-ground constellation. It is also possible that the experience of the gradient entails several discrete layers, each of which can serve as a ground for a figure but functions at the same time as a figure on a ground.¹⁷⁷ The latter is the case, to give an example of my own, when we are sitting as a student in the back of a classroom. Then the other students in front of us can be a figure of the first order for which the professor serves as ground, while the latter, in turn, can be a figure of the second order, standing in front of the blackboard, which is itself a figure of the third order, standing out from the wall behind it as ground, etc. Since figure-ground layers should be distinguished from measurable levels of ‘closer’ and ‘farther’, i.e. of foreground and background,¹⁷⁸ however, we can alternate this constellation and order of layers, for example when we concentrate on the professor (first order figure), who might either talk directly to the students (second order figure) *or* write something on the blackboard (second order figure).

Now it should not be surprising that we can find the same three types of alternating gradients in part-whole alternations as well. Firstly, to pursue the above example further, there is a unique and complete shift when we turn from the situation of the class as a whole, for instance from our impression of its social and educational function¹⁷⁹ that is not inherent in any of the parts in isolation, to one or more single parts, for instance to an annoying student who *happens* to disturb the functioning of the whole. Suddenly and without transition, this part stands out from the whole, which is then backgrounded for the moment. A comparably smoother transition between

¹⁷⁵“Im strengsten Sinne gibt es keine Muster, die vollkommen willkürlich, d. h. in 100% aller Beobachtungen, zum Umschlag gebracht werden können, andererseits aber auch keine Muster, deren Umschlag ganz unmöglich wäre.” [id.]

¹⁷⁶This finding corresponds with the experimental research of Hochstein et al. [2002], according to which every act of perception is a combination of an implicit, i.e. unconscious bottom-up ‘vision at a glance’ of basic-level categories and an explicit, i.e. conscious top-down ‘vision with scrutiny’ of more detailed aspects in the perceptual field. Both types of vision reflect cortical mechanisms on different levels. Whereas the former type implies the classical hierarchy in which wholes are perceived immediately and are therefore prior and higher, the second type of vision implies what the authors develop as ‘Reverse Hierarchy Theory’, in which the process of vision is directed to the detailed parts rather than to the whole of the visual field: “Detailed scrutiny, focusing attention to particular locations or objects, unbinds illusory conjunctions of features and rebinds the features veridically to identify items actually within the scene. Thus, vision with scrutiny is required to unbind initial incorrect conjunctions and revise vision at a glance when unexpected conjunctions are present in the scene.” [Hochstein et al. 2002: 796]

¹⁷⁷Cf. [id.: 300 f.].

¹⁷⁸Cf. subsection 7.4.1 above.

¹⁷⁹This is an example of what Gestalt theorists often call a *Bezugssystem*, a system of reference. Cf. Rausch [1966: 898], Ash [1995: 375] and Metzger [2001: 131].

parts and whole would take place when the professor writes the homework for the next meeting on the blackboard. Then the class as a whole in its characteristic of a recurring event alternates almost impalpably with the particular moment of homework-assignment. Furthermore, if we only consider the persons present in the classroom and their distinctive spatial position, then several part-whole layers can be distinguished: all persons (whole of first order), the students (whole of second order), the students sitting in the back row (whole of third order), etc. Thus Ehrenstein's different types of experientiable gradients in ambiguous figure-ground phenomena also applies to ambiguous part-whole phenomena, perhaps also because, as Attneave observes, the stability of a multistable phenomenon is often generated via constant switches from the part level to the whole level and back again.¹⁸⁰ There are examples from everyday life and perception in abundance,¹⁸¹ and the only difference between figure-ground and part-whole in this regard is that while a ground is experienced as lying outside of and not necessarily geometrically 'behind' the figure,¹⁸² a part is experienced as being 'inside' the whole, yet not necessarily according to the model of a physical container.¹⁸³

To conclude, the rethinking of multistable phenomena, including but also transcending phenomena displaying ambiguous figure-ground relations, has led to a positive and a negative insight. Both insights are based on the opening question of this section: whether it is possible to discover in the field of perceptual multistability an appropriate, i.e. dynamic and flexible hierarchy for interdependent part-whole structures with emerging and demerging perceptual meanings. The positive insight might respond to this question that there is indeed empirical and argumentative evidence for the subsumption of such part-whole structures into the more

¹⁸⁰“In certain ambiguous figures we can clearly see the nature of the positive feedback loop that accounts for the ‘locking in,’ or stabilization, of one or another aspect of the figure at any given time. For example, if in the young girl - old woman figure [Figure 7-6, M.S.] a certain line is tentatively identified as a nose, then a line below it must be the mouth and the shapes above must be the eyes. The partial identifications mutually support one another to form a stable perception of an old woman. If, however, the line we started with is seen as a chin instead of as a nose, then the perception formed is that of a young woman. The identification of wholes and parts will likewise be reciprocally supportive, contributing further to the locking-in process.” [Attneave 1971: 66]

¹⁸¹There is a famous example from the Gestaltist literature (cf. Rausch [1966: 898] and Metzger [2001: 141 f.]) that shows how cognate figure-ground and part-whole perception often are. Although this example concerns only a particular *non-ambiguous* figure-ground and part-whole perception, it is still revealing because it demonstrates how in ordinary language, both structures can be blurred without inconsistencies for referring to the object in question. A button, the example goes, can be said (and perceived) to be either *on* a skirt, or *belonging to* a skirt. While the first possibility refers to a figure-ground relation, the second refers to a part-whole relation. Formally, as Rausch points out, the first possibility presupposes that the skirt is already complete without the button (complete skirt = textile) while the second possibility presupposes that the skirt would be incomplete without the button (complete skirt = textile + button). To avoid this confusion, we could distinguish ‘complete skirt’ (button + textile) and ‘incomplete skirt’ (textile without button). But then it would be both wrong to say that ‘the button is on the incomplete skirt’ (because then the skirt would not be incomplete), and it would be wrong to say that ‘the button is on the complete skirt’ (because if the skirt is already complete, there would be no use for another button). By just using the word ‘skirt’ in our ordinary language, Rausch concludes, we avoid this antinomy and use ‘skirt’ as an equivocation the meaning of which is indeterminate. If we accept the cognitive linguist paradigm that language relies on (embodied) perception, then this example implies that in cases like these, a clear demarcation between figure-ground and part-whole would lead to certain predicaments, or, positively formulated, that both phenomena show some overlaps, which allows for – as I am doing in this section – the transposition of characteristics from one to the other.

¹⁸²Cf. Rubin [1921: 50].

¹⁸³Cf. the argumentation in subsection 4.2.4.

general category of multistable phenomena. The hierarchy inherent to such phenomena cannot, as we have seen, be unchanging, because with every alternation what has been ‘higher’ (e.g. a figure, an abstract or figurative pattern, a whole) changes into what is supposed to be ‘lower’ (e.g. a ground, another abstract or figurative pattern, one or more parts). Then, perhaps by what Metzger describes as a ‘change of conception’ (*Auffassungswechsel*¹⁸⁴), the existence of a new interim yet stable hierarchy with unforeseen perceptual meanings can be said to appear in the sense of ‘snapping into place’. As a multistable phenomenon, PWO is thus neither ontologically ‘flat’, because there is always some kind of verticality involved, nor is there any default vertical chain of being that is in any sense unalterable. Furthermore, the rethinking of multistability has also shown how PWO’s parameter *reality*, i.e. its reality-directedness that already surfaced in the distinction between conceptual metonymy and synecdoche,¹⁸⁵ can be satisfied. This happens through the – albeit speculative – localization of more than one perceptual meaning already in the stimulus level and also through the expansion or universalization of multistability beyond rarely occurring visual illusions. For these reasons, we can identify the appropriate hierarchization of parts and whole in PWO with the alternating hierarchies that form the basis of multistable phenomena in general.

The negative insight, however, consists in the fact that I have not arrived at one or more *concrete* alternative hierarchical models into which the just delineated positive insight could be implemented. Although it would be consequential and worthwhile, I have to concede that the development of such a model, but also only the introduction and critical discussion of already existing models, would go beyond the limited scope of and capacities for the present project. For this reason, the elaboration of this subject matter has to remain a mere suggestion for further empirically inspired ontological or even metaphysical research in this regard. As alternatives to the classical notions of triangle-shaped or pyramid-shaped hierarchies,¹⁸⁶ one could, for example, take into consideration the philosophically still little regarded ideas of what W. McCulloch introduced as ‘heterarchy’,¹⁸⁷ A. Koestler as ‘holarchy’ or ‘Self-regulating Open

¹⁸⁴“Das Bemühen um eine andere Auffassung kann aber auch ganz anders beschaffen sein, bescheidener, weniger ‘frei’ und selbstherrlich, nicht selbst formend, sondern nur suchend: ohne ein von dem Betrachter selbst vorher fest bestimmtes Ordnungsprinzip; nur darauf bedacht, tiefer in das Gegebene einzudringen, einen günstigeren Standpunkt oder ein günstigeres Licht zu gewinnen, (etwa durch Zurücktreten) eine bessere Übersicht oder (z. B. durch Augenreiben, Brillenaufsetzen u. dgl.) eine festere Reizbindung zu erzielen; alles, um neue Merkmale daran zu entdecken, durch deren Hinzukommen das anschaulich Vorliegende vielleicht plötzlich aus sich heraus, ohne Zwang des Betrachters, sich ganz neu gestalten, neu ordnen, neu gliedern, neu zentrieren, einen neuen Maßstab gewinnen könnte [...]” [Metzger 2001: 234]

¹⁸⁵Cf. subsection 5.2.4 and the corresponding determination PWO_{ind_lang_3}.

¹⁸⁶Cf. Leisegang [1951] on the philosophical history and implications of this type of hierarchy.

¹⁸⁷Cf. McCulloch [1945] and for a definition and sociological examples Crumley [1995: 2]: “Heterarchy may be defined as the relation of elements to one another when they are unranked or when they possess the potential for being ranked in a number of different ways. [...] While hierarchy undoubtedly characterizes power relations in some societies, it is equally true that coalitions, federations, and other examples of shared or counterpoised power abound. The addition of the term heterarchy to the vocabulary of power relations reminds us that forms of order exist that are not exclusively hierarchical and that interactive elements in complex systems need not be permanently ranked relative to one another. In fact, it may be in attempts to maintain a permanent ranking that flexibility and adaptive fitness is lost.”

Hierarchic Order (SOHO)',¹⁸⁸ or H. Rombach as 'niveau'¹⁸⁹ within the context of his detailed *Strukturontologie*.¹⁹⁰ Suffice it to say that there is much potential in these and other alternative hierarchical models for an adequate elucidation of interdependent part-whole structures. In any case, with the positive research findings of this section, it is time to formulate the fourth and, for the present project, final determination of the ontological nature of PWO within the domain of empirical perception:

PWO_{ind_emp_4}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole can alternately stand out as being foregrounded and/or backgrounded, which makes the part-whole entity in question ambiguous and multistable. This precludes the assumptions both of an unchanging ontological hierarchy of parts on a lower and the whole on a higher level and of a flat ontology in which there are no vertical levels at all. Like the process of PWO itself, the hierarchy in which its different aspects are ordered is fundamentally reversible and perceptible in its reversions.

After having arrived at this fourth partial determination of PWO for the realm of empirical perception, we have gained a sufficient amount of combinable data to formulate a complete ontological determination of PWO that is experience-based in a bottom-up fashion, which is in accordance with the 'inductive' method of the present project. This determination, together with a summary of this project's line of argumentation and its potential for integration into a broader ontological framework, I will provide below in the 'General Conclusion'. Prior to this, however, let me just point out one terminological, or rather definitional, issue that has come to the fore during the previous reflections on the notion of 'Gestalt' and the part-whole structure it consists of. We can put the question as follows, thereby alluding to the very first lines of chapter 6: What is a 'Gestalt' in terms of parts and whole, i.e. how should 'Gestalt' be

¹⁸⁸The following longer quote from Koestler [1970: 135–6] serves to give a clearer picture of this interesting notion: "A part, as we generally use the word, means something fragmentary and incomplete, which by itself would have no legitimate existence. On the other hand, there is a tendency among holists to use the word 'whole' or 'Gestalt' as something complete in itself which needs no further explanation. But wholes and parts in this absolute sense do not exist anywhere, either in the domain of living organisms or of social organizations. What we find are intermediary structures on a series of levels in ascending order of complexity, each of which has two faces looking in opposite directions: the face turned towards the lower levels is that of an autonomous whole, the one turned upward that of a dependent part. I have elsewhere proposed the word 'holon' for these Janus-faced sub-assemblies – from the Greek *holos* – whole, with the suffix *on* (cf. *neutron*, *proton*) suggesting a particle or part. The concept of the holon is meant to supply the missing link between atomism and holism, and to supplant the dualistic way of thinking in terms of 'parts' and 'wholes,' which is so deeply engrained in our mental habits, by a multi-levelled, stratified approach. A hierarchically-organized whole cannot be 'reduced' to its elementary parts; but it can be 'dissected' into its constituent branches of holons, represented by the nodes of the tree-diagram, while the lines connecting the holons stand for channels of communication, control or transportation, as the case may be."

¹⁸⁹Rombach [1980: 232] describes this experienced-based concept here in a nutshell: "Es muß mit aller Deutlichkeit festgehalten werden, daß das, was hier mit 'Niveau' und 'Rang' bezeichnet wird, den nicht-hierarchischen Sinn von *Plateaus* hat, von *Dimensionen*, die sich übereinander aufbauen, und von denen die unteren als die fundamentalen die *Conditiones* – aber nicht die *Ursachen* – der höheren sind. Eine jede Dimension kann nur dadurch 'sprechend' werden, daß sie ihre Qualitäten als *herausgehobene* Bestimmungsweisen zu erfassen gibt. Qualitäten können sich jedoch nur dann herausheben, wenn sie vor einem Hintergrund oder Untergrund erscheinen. Hinter- und Untergrundgegebenheiten sind die Qualitäten fundamentalerer Dimensionen. [...] Was wir Dimensionen, Plateaus oder Niveaus nennen, sind *Reflexionsstufen* der Wahrnehmung."

¹⁹⁰Cf. Rombach [1988; 1994; 2003; 2010] and the reflections on it in Stadler [2014; 2015].

understood mereologically? For the purpose of introducing ‘Gestalt’ in an intuitively accessible manner, I wrote that a Gestalt ‘is a complex yet uniform entity which can be a content of perceptual experience, in other words, it is a perceptible *unity in diversity* and/or a perceptible *diversity in unity*.’ Now, in the light of the preceding discussion of one-sided and two-sided part-whole dependency, three answers to this question, i.e. three specifications of this preliminary characterization, offer themselves:

1. We can say with Ehrenfels that ‘Gestalt’ mainly relates to the ‘diversity’ side in being a perceptual part that is added to a sum of stimulus parts in order to create – but only in an ontologically secondary step – a (decomposable) perceptual whole, i.e. a unity. A ‘Gestalt’, as a part, is thus an additional ‘quality’ that is addable to the sum of previously existing and primary stimulus parts. In short and somewhat oversimplified: *Gestalt = Gestalt quality = part*.
2. This definition of a Gestalt can be contrasted with the view of the Berlin school, according to which a Gestalt denotes the perceptual whole rather than (one of) its parts.¹⁹¹ A ‘Gestalt’ in this sense is thus more on the unity side of the given characterization, and this unity side, as we have seen, both epistemologically and ontologically precedes the diversity of individual parts. In short and somewhat oversimplified: *Gestalt = (perceptual and natural¹⁹²) whole*.

What both conceptions have in common, however, is that they seem to understand ‘Gestalt’ as something both hierarchical (with either the part(s) or the whole as being the primary side) and as something static.

3. In developing the idea of PWO within the framework of traditional and contemporary Gestalt theory, I want to suggest a third way in which we can understand the term ‘Gestalt’, namely as a back and forth movement that reverses the hierarchy between parts and whole continuously. In short and somewhat oversimplified: *Gestalt = (parts \rightleftharpoons whole)*. This conception would embrace both the unity and the diversity side of the given characterization, but without combining them both into a ‘higher’ unity of unity and diversity, which would only be to the detriment of the diversity.

Although my own position in this matter seems to be obvious by now, this is not the place to argue in favor of any of these three mereological conceptions of ‘Gestalt’ or to discuss further

¹⁹¹Cf. Mulligan et al. [1988: 130 f.]: “Ehrenfels acknowledges that the notes constitute in and of themselves a certain complex whole, and that the Gestalt quality is founded upon (is, precisely, a ‘quality of’) this complex whole. But the quality itself is not a whole embracing the individual sensational elements of parts: a view of this sort was developed only with the work of Wertheimer and the other members of the Berlin school.”

¹⁹²‘Natural’ here relates to the fact that Wertheimer and in particular Köhler held the view that Gestalts also occur in the physical sphere (both in our nervous central system and in physical phenomena such as electrical fields), and that there is an isomorphism, i.e. a structural similarity between perceptual and physical Gestalts such that the former are actually derivable from the latter. Since I have concentrated on perceptual phenomena, it was not necessary to delve into this important and still discussed topic of Gestalt theory’s inherent naturalism. Cf. on Gestalt Theory’s psychophysical isomorphism for example Köhler [1920; 1929], Henle [1984], Epstein et al. [1994], Ley [1996], Luccio [2010], Luchins et al. [2015], and Lobb [2016]. Cf. for phenomenology’s critique of this naturalistic stance Husserl [1976] and Merleau-Ponty [1967; 2012].

possible ones. The only consequence I want to draw from this terminological or definitional issue is to suggest a clear demarcation to avoid the term ‘Gestalt’ becoming a homonym for too many significations. Let us therefore use ‘Gestalt quality’ for a part (as property, quality, mode of appearance) of a whole that makes it in one way or another ‘different from the sum of its parts’, and let us use ‘Gestalt’, according to the Berlin view, as this whole itself. For PWO in the realm of perceptible part-whole structures, I suggest the nominalization ‘Gestaltung’, which is close enough to ‘Gestalt’ to be identified with this particular discourse, but which both accentuates with the suffix ‘-ung’ the dynamic character of a movement and with the general German meaning of ‘Gestaltung’ also the creative potential for meaning-generation such an interplay between parts and whole involves.¹⁹³ The three terms ‘Gestalt quality’, ‘Gestalt’ and ‘Gestaltung’ thus do not exclude each other, but could be regarded as a historically grown progression of what is identifiable as and within the empirical perception of part-whole structures.

¹⁹³“Taken as a verb, *gestalten* describes precisely the activity of the potter, sculptor or Demiurge in forming, shaping, moulding [...]” [Simons 1988: 160]

Conclusion: The Determination of PWO's Ontological Nature

The attempt to describe an entity of any kind as the entity it is, in its being qua being and not in its being a subject to more special sciences or particular ideologies, is the attempt to determine this entity's ontological nature. This Aristotelian approach of what was later called 'ontology' (or 'general metaphysics') would be very limited, however, if it were to understand Being only as something static, present and consistently thinkable that is subject to universal laws of logic. One of the more implicit aims of this project was to show that ontological determinations of an entity as the entity it is can also, as several 'process ontologies' have shown before, range over dynamic, latent and consistently experienceable yet logically often paradoxical or at least not fully determinable entities. Therefore, I agree with Merleau-Ponty [1964: 95–6], who writes that "[m]etaphysics is not a construction of concepts by which we try to make our paradoxes less noticeable but is the experience we have of these paradoxes in all situations of personal and collective history and the actions which, by assuming them, transform them into reason."

In applying this conviction to ontological matters, I demonstrated in a number of argumentative steps and by taking into consideration different disciplines with different methods (formal ontology, cognitive linguistics, Gestalt research) that it is indeed worthwhile to start out with classical and familiar ontological concepts, such as *part* and *whole* in this case. Instead of limiting the research question to 'what is a part (in general or in context x)?' or 'what is a whole (in general or in context x)?', however, I found it equally, if not more, interesting and promising to ask about the specific and hard to grasp 'in-between' of parts and whole (in general or in context x). This necessitates disclosing ways in which both sides are interdependent and even interpenetrating in a process of ongoing backgrounding and foregrounding: a back-and-forth movement that I have called from the very beginning 'part-whole oscillation' (PWO). I introduced it by means of a fictional scenario in which the protagonist of Arnheim's novel *A Topsy-Turvy World* undergoes an ontological transition from a mechanical world of part-whole independence to an organic world of part-whole interdependence. Let me now recapitulate the most significant argumentative steps and insights of this ontological determination, thereby beginning with a list of the eight partial characterizations of PWO and continuing by deriving the steps that led to these characterizations. In the end, I conclude by merging them into one whole determination of the ontological nature of PWO for the domains on which I decided to concentrate in the present project.

The following are the eight partial characterizations of PWO's ontological nature:

- PWO_{ded} A part-whole oscillation (PWO) is the dynamic interplay of moments and whole within the same entity. It occurs when during the fusion (continuation) of moments and whole both moments and whole become distinguishable (discontinuous) as well.

During their continuation, moments and whole stand out alternately and the entity in question displays both the qualities of the moments and the potentially different or even contradictory qualities of the whole.

PWO_{ind_lang_1}: A part-whole oscillation (PWO) occurs in natural language, because due to our body/environment interactions, we develop a PART-WHOLE image schema which makes for perceptually and situationally meaningful experiences of part-whole structures. In so doing, this image schema contributes to shape our abstract thinking (our concepts) and is therefore linguistically expressible. Furthermore, the PART-WHOLE image schema has the capacity of being structured like a mosaic in general and like a fractal in particular, which means that the whole can be regarded as iterated and occurring in (one or more of) its parts.

PWO_{ind_lang_2}: A part-whole oscillation (PWO) occurs in natural language as conceptual metonymy. Unlike a conceptual metaphor, a conceptual metonymy relates to one homogenous experiential domain and allows for a whole in / the whole of this domain to be either *backgrounded* (domain reduction: WHOLE TO PART) or *foregrounded* (domain expansion: PART TO WHOLE) such that one or more of its parts are either *foregrounded* or *backgrounded* in return. The part-whole structure of a conceptual metonymy is thus not only interdependent, but also co-active and bidirectional, i.e. both the parts and the whole are conceptually present and thus retrievable at any time. This means that they can 'oscillate' by continually switching into each other.

PWO_{ind_lang_3}: A part-whole oscillation (PWO) as conceptual metonymy is directed towards external objects and events. It is thus a linguistic and conceptual yet body-based device or a 'mental shortcut' which helps us to conceptualize and express aspects of reality itself as against taxonomic categories of the mind. With conceptual metonymy, we think of and linguistically express aspects of the experienced world around us in dynamical and meaningful part-whole mappings without, as in conceptual metaphor, changing the experiential domain in the transition from source (whole/part) to target (part/whole).

PWO_{ind_emp_1}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole become perceptually meaningful through mutual interaction that appears as a happening to the whole via its parts. This dynamic interdependency prevents both absolute whole homogeneity as well as whole primacy and absolute part heterogeneity as well as part primacy.

PWO_{ind_emp_2}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole become perceptually meaningful through mutual interaction that is instantiated by the acts of splitting a whole into parts and merging parts into a whole.

PWO_{ind_emp_3}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole become perceptually meaningful during the more general processes of ontological emergence and ontological demergence.

PWO_{ind_emp_4}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole can alternately stand out as being foregrounded and/or backgrounded, which makes the part-whole entity in question ambiguous and multistable. This precludes the assumptions both of an unchanging ontological hierarchy of parts on a lower and the whole on a higher level and of a flat ontology in which there are no vertical levels at all. Like the process of PWO itself, the hierarchy in which its different aspects are ordered is fundamentally reversible and perceptible in its reversions.

These are the eight partial determinations, and before I combine them into one embracing determination to conclude the present project, let us review the line of argumentation from which these partial determinations have resulted. As a first attempt to approach the research topic and to derive it from the fictional scenario in which it was introduced, I embedded it within the fourfold grid of the parameters *experience*, *reality*, *part-whole* and *meaning*. In their function as parameters, they were, on the one hand, variable enough to determine the notion of PWO within different contexts studied by different disciplines, while on the other hand, they constituted a guideline, initially formulated as a roadmap, for the concrete ontological research that was to be carried out. Sometimes explicitly, most of the time, however, implicitly in order to avoid a too schematic and rigid development of the argument, I interconnected these parameters in the course of the project within different contexts and thereby gave them values in a flexible way. For example, in the second chapter the parameter *part-whole* was bound in the context of Husserl's formal ontology with the values of being universal, a priorily determinable and subject to part-independence ('objective pieces'). However, from the third chapter on, the same parameter (*part-whole*) was paired with the parameter *experience* (bound as 'empirical perception') and thus received a character of contingency, experienceability, particularity and part dependence ('perceptible moments'). The choice of these parameters naturally pushed the project into a certain direction, and another set of parameters or other ways of binding and/or pairing them would have led to different results. Instead of just defining a number of axioms at random, however, the four parameters have the advantage that they are derived from a concrete, albeit fictional situation in which the research object occurs. They also provide a flexible adaptability in receiving values, and instead of being ends in themselves, they are the 'bendable backbones' on which the determination of PWO was able to rely from the outset.

After the illustration of the research object with the help of a fictional scenario and after deriving the relevant parameters for its investigation, I devoted the first chapter to deciding upon appropriate methods with which the until then only vague idea of PWO could be determined at all. Although the first chapter was thus meta-ontological in nature, the methodological reflections therein were already based on a pairing of the bounded parameters, viz. the study of *reality*, i.e. ontology, and the adequacy of *experience* for gaining ontological insights. This means that in addition to the more conventional ontological method of a priori or 'armchair' reasoning, I found it fundamental to include the a posteriori, empirical *experience* of part-whole structures for an ontological purpose. For the development of this duplex method, I first interpreted the necessity of its double-sidedness with the primarily Kantian distinction between *quaestio facti* and *quaestio iuris*.¹ The *quaestio facti*, here understood as a meta-ontological

¹Cf. section 1.1.

question concerning the method of ontological research, relates to the factual givenness of a certain concept or entity, to its modes and reasons of existence as well as its relations to similar concepts and entities. In contrast, but also in consequence, the meta-ontological *quaestio iuris* inquires about the justification or the evidence of what had been postulated as this concept's or entity's modes and reasons of existence. I argued that these two approaches complement each other, because the first one establishes, analyzes and delimits the research object, while the second one ideally prevents unjustifiable speculations and identifies the research object in the world outside our minds. Furthermore, by drawing on Hessen's 1955 study on ontological / metaphysical methodology, I identified the approach of the *quaestio facti* as being 'deductive'² and the approach of the *quaestio iuris* as being 'inductive'³. In contemporary terms, we could say that whereas the deductive method concerns matters of formal ontology and acts in a top-down fashion $\begin{matrix} \text{Concept} \\ \downarrow \\ \text{Reality} \end{matrix}$, the inductive one is rather bottom-up $\begin{matrix} \text{Concept} \\ \uparrow \\ \text{Reality} \end{matrix}$. It connects to the novel field of 'experimental philosophy' and stands closer to other, more empirical disciplines. Of course, other methods could also have been implemented for ontological purposes, for example what Hessen calls the 'intuitive' method that draws on profound ontological experiences (*Seinserfahrung*), but also more phenomenological (including Heideggerian) and/or speculative methods. But with the combination of the deductive and the inductive method, I was hoping to overcome the unidirectional nature of each method in order to comprehensively determine the research object: $\begin{matrix} \text{Concept} \\ \downarrow \uparrow \\ \text{Reality} \end{matrix}$. As with the parameters, a different choice of methods would probably have resulted in different research results. Then I subdivided the inductive method into two cohesive branches: research on ordinary, empirical language⁴ and on empirical perception.⁵ Instead of conducting such research in the form of experiments or questionnaires myself, however, due to a lack of resources I decided merely to elaborate on the research of philosophers and scientists who had carried it out. Finally, the project was ready to apply these two methods, with the second one forked into two aspects: to the issue of part-whole relations, with a special emphasis on their mutual interplay, and to deriving the partial characterizations of PWO one by one.

Considering the first method, the first question to ask was: Is the dynamic interplay between parts and whole conceivable in a purely formal sense, i.e. just by means of conceptual analysis? Is it 'deducible' from the notions of parts and whole without considering any kind of experience? Only to a certain degree, but not beyond, could this question be answered in the affirmative and the first characterization of PWO's ontological nature (PWO_{ded}) derived in the second chapter. First of all, I had to select an appropriate formal ontology that deals with part-whole structures.⁶ Due to its 'open-source' quality of being adaptable and applicable and therefore also somehow unfinished,⁷ and due to the fact that it not only considers part-whole relations in a formal sense but, parallel to that, also in a 'material', i.e. experience-based sense,⁸ Husserl's part-whole ontology of his 3rd *Logical Investigation* seemed to be a promising starting point. The

²Cf. section 1.2.

³Cf. section 1.3.

⁴Cf. subsection 1.3.1.

⁵Cf. subsection 1.3.2.

⁶Cf. section 2.1.

⁷Cf. section 2.2.

⁸Cf. subsection 2.2.1.

second advantage was all the more important, since it pointed in the direction of the second (inductive) method, without, however, influencing the elaboration of the formal domain.

To put it simply, I demonstrated how Husserl provides a fourfold pattern in which complex part-whole structures, i.e. structures in which the whole consists of more than one part, can be embedded.⁹ On the one hand, such structures either describe a universal species and range over all kinds of objects according to eternal laws of necessity (the study of which is called 'formal ontology'), or they are contingent, particular instantiations of these necessary laws and as such are localizable in the empirical world (the study of which is called 'material ontology') as contents of perception. It is important to note that 'material' does not necessarily mean 'made up of physical matter' in this context, but can also refer to secondary or even tertiary qualities. On the other hand, Husserl works with a distinction between dependence and independence. Parts and whole, both in a formal and in a material sense, either stand in relations of independence or dependence.¹⁰ If a whole is dependent on one or more of its parts, then the existence of the former relies on the existence of the latter. The same is true for parts in relation to a whole. Also, independent wholes or parts can relate to each other, but then they exist prior to the relation. Moreover, if parts compose a whole on which they do not depend, then they are called 'pieces', form an 'aggregation', relate to each other discontinuously, and fit into a 'horizontal' ontology, because this kind of whole does not possess qualities that are supra-summative in relation to the parts' qualities.¹¹ Only in the case of dependent parts, which are called 'moments' and which relate to each other continuously, do we enter a scale of higher and lower. In this scale, the whole, in which the dependent parts find completion and on which they are founded, is richer than the parts, because it also contains what the parts lack in order to exist independently.¹²

With this pattern and some refinements of it, I showed that the determination of PWO's ontological nature can only take place in the intersection of 'material ontology' and 'part-whole dependence'. It firstly presupposes a dependence relation between parts and whole, but secondly leads to inconsistencies in the formal domain.¹³ This is because it would lead to an infinite proliferation of entities (if p_1 and p_2 stand in a mutual dependence relation with w_1 , then $p_1 w_1$ would need a w_2 to exist etc.). Also, if a whole depends on its parts, it can find completion only in something it already contains, which is inconsistent with the formal principle, postulated by Husserl himself, that the completion of an entity has to lie in something more embracing than itself. Thus a whole would have to contain a whole, consisting of itself and its parts, or the parts of a whole would have to contain the whole itself. While, in formal-ontological terms, this does not make much sense, Husserl mentions that it can be the case in empirical perception. He himself, however, only points to this direction without going there. Since the particular movement or process of PWO indeed seemed to occur in the domain of a material ontology, however, it had to be somehow formally possible, although it is more than difficult to see how exactly. I therefore declared PWO as absent (but not impossible) in a formal ontology and present in a material ontology, into which the Husserl of this *Logical Investigation*, however,

⁹Cf. subsection 2.2.2.

¹⁰Cf. subsection 2.2.3.

¹¹Cf. subsection 2.2.5.

¹²Cf. subsection 2.2.6.

¹³Cf. subsection 2.2.7.

does not delve.¹⁴ For this project's line of argumentation, this meant taking from the 3rd LI what it could provide for a first characterization of PWO's ontological nature, formulated in PWO_{ded}, but then leaving the deductive method behind and initiating the second, inductive method in the hope of more positive research results.

Nevertheless, I wanted to show in the third chapter, which I will not summarize here because it did not lead to further positive characterizations but mainly paved the way *ex negativo*, for how and why two other realizations of this fourfold pattern are not to the purpose. Firstly, contemporary mereology and, in general, approaches that argue in favor of a part composition as being identical with what they compose mostly presuppose the notion of 'pieces' rather than 'moments' in concentrating on the material (here: physical) world.¹⁵ The better part of these approaches are thus, broadly speaking, classifiable with the intersection of Husserlian 'material ontology' and 'independent pieces', related to wholes that are mere aggregations of their pieces. Then, since for methodological reasons I was about to investigate aspects dealing with part-whole relations in ordinary language, it was obvious that we should take a look at the subsequent 4th of Husserl's *Logical Investigations*, in which he applies his part-whole ontology to matters of language and thus of linguistic *meaning*.¹⁶ Although he not only discovers independent parts as 'categorematic' components of meaningful language, but also dependent parts as 'syncategorematic' components, his linguistic theory is explicitly non-empirical. Rather, it is a top-down extension of his formal ontology and thus not a 'bottom-up' development of a 'material ontology' of language. I therefore had to rule out the 4th LI for the further positive determination of PWO's ontological nature, but could still manage to identify traces in it that led to the discipline of cognitive linguistics.¹⁷ To be sure, it would have been worthwhile, if my choice of methods had not precluded it, to stay with Husserl and focus on his later works, in particular *Ideas* and *Experience and Judgement*. In so doing, I could have analyzed the ways in which he uses his own part-whole framework in order to phenomenologically describe how an object is constituted in consciousness. This interesting question can be the subject of further research on this topic.

In order to investigate whether there are interdependent, dynamic part-whole relations in the way they had been a priori characterized by PWO_{ded}, I turned to the contemporary field of cognitive linguistics in the fourth and fifth chapters. Since this field is relatively broad and covers many different topics, a choice had to be made concerning the main scholar and subjects on which to concentrate. At least for the first approach to cognitive linguistics, I argued that M. Johnson, including his collaborative works with G. Lakoff, would be a sound starting point, given that Johnson's research establishes a bridge between empirical science and philosophical reflection. It was possible to demonstrate the benefit of such a bridge, even before turning to linguistic phenomena themselves, in the delineation of the general epistemological framework in which Johnson embeds his more particular research findings concerning the conceptual yet body-based nature of metaphors and of what he calls 'image schemata'. First of all, I showed that Johnson operates with three layers of *meaning*, which I termed 'propositional meaning',

¹⁴Cf. section 2.3.

¹⁵Cf. section 3.1.

¹⁶Cf. section 3.2.

¹⁷Cf. subsection 3.2.2.

‘perceptual meaning’ and ‘situational meaning’.¹⁸ In a nutshell, he argues that a comprehensive understanding of meaning is irreducible to true propositions and language expressing true propositions alone, because this type of meaning cannot do justice to the fact that we experience something as meaningful. Propositional meaning rather relies on the way we perceive our bodies and the world around us with our bodies. It thus relies on perceptual meaning, which in turn relies on the more general ways in which we experience being in or belonging to the world, i.e. the fundamental inseparability and only gradual difference of mind, body and world: situational meaning. Although I argued that with empirical methods alone, as they are advocated by Johnson, we cannot really approach the profundity of situational meaning but only of perceptual meaning, it is consequential to embed even perceptual meaning into the postulation of a mind-body-world unity.¹⁹ Only with such a postulation can an answer be given to the question of how any structure of language and abstract thought might come into existence in the first place, namely because language and thought are embodied, and because our bodies are, in a certain sense, ‘enworlded’. This means that the structures in which we make meaningful propositions and in which we perceive the world as meaningful, i.e. the most basic structures ‘inside’ our minds and sense organs, are ontologically isomorphic with the most basic structures we can find in the world ‘outside’ us. I agree with this postulation, because it makes plausible the occurrence of PWO in ordinary, empirical language. Moreover, it convincingly suggests that the body and the body-world connection should be taken more into consideration in the philosophical discipline of contemporary ontology. In which sense are the ontological categories we postulate, scrutinize and formalize based on our embodied being-in-the-world? A rich pool of research hypotheses and argumentative evidence is waiting to be explored in this regard, a pool into which the research of Johnson and Lakoff, albeit or because it is mostly empirical and language-focused, could serve as a stepping stone.

Nonetheless, for the question of whether, and if so, in which way, the notion I was seeking to determine could be located in the cognitive structure of ordinary language, the phenomenon in relation to which Johnson and Lakoff have become famous – namely conceptual metaphor – proved to be unfounded. Primary conceptual metaphors are body-based concepts derived from our everyday experience of and our bodies’ physical interaction with the world. For example, the physical and perceptible dimension of ‘up’ and ‘down’ gives rise to the primary conceptual metaphors MORE IS UP and LESS IS DOWN, with which we conceptualize quantity with the more basic and concise experience of physical verticality. Primary conceptual metaphors are thus one of the results of the bidirectional relation between what can be called the ‘experiential domain’, consisting of Gestalt perception and sociocultural background, and an even more basic ‘sensorimotor domain’, consisting of body/environment interactions and image schemata. Whereas the latter domain determines how we actually experience (something in) the former, the former domain gives value to (‘evaluates’) or makes sense of the latter. This bidirectional relation establishes itself mostly unconsciously.²⁰ If one or more primary metaphors are applied to an experiential domain for which there is no physical and perceptible counterpart in our bodies and in the world, for example to the experience of emotions or of abstract thoughts, then we speak of ‘complex conceptual metaphors’ (e.g. LOVE IS A JOURNEY, whereby ‘journey’ is a combi-

¹⁸Cf. subsection 4.1.1.

¹⁹Cf. subsection 4.1.2.

²⁰Cf. subsection 4.2.1.

nation of several primary metaphors).²¹ This application of one (set of) primary metaphors to an experiential domain for which there is no sensorimotor grounding is called 'mapping'. One of the main ideas behind complex conceptual metaphor is that we map unidirectionally *across* experiential domains: We take one or more body-based concepts from a source domain and map it to an experientially different target domain in order to give meaning to and linguistically express it.²² Metaphorical mapping is thus comparable to an unconscious copy-and-paste process, at the end of which the source domain itself often plays no significant role anymore and all the credit goes to the now conceptualizable and expressible target domain. This is the main reason why PWO cannot be a complex conceptual metaphor, because in PWO, both sides (whole and parts) are always present and retrievable, no matter which side stands out at any given time. Furthermore, I showed that PWO is also not identifiable as a primary conceptual metaphor, not even of the most basic 'ontological' kind, because it is neither derivable from physical objects (that consist of pieces rather than moments), nor from physical containers with an in/out structure.²³ At the end of chapter 4, I thus came to the conclusion that there has to be another type of cognitive-linguistic structure based on the bidirectional relation between sensorimotor and experiential domain besides conceptual metaphor. I expected that with this structure, PWO could indeed be identified and that it would ideally lead to further positive characterizations of its ontological nature.

This expectation was then fulfilled in chapter 5 with a closer inspection of what the idea behind 'conceptual metonymy' entails. Before PWO could be identified within the field of ordinary language as it is studied and regarded in a non-dualistic epistemological framework by cognitive linguistics, however, it was necessary to analyze the relevant image schema that gives rise to part-whole structures as cognitive linguistic phenomena. To do so, I firstly delineated the idea of image schemata in general.²⁴ Image schemata are, in short, preconceptual and simple, yet conceptualizable and flexible spatial patterns that come into existence by our bodies' ongoing interactions with its physical environment. They are hypothesized as being cognitively real and are said to enable both our understanding of the world around us and higher forms of abstract thinking. They are interculturally shared due to the common nature of our bodies, but are, at the same time, interpretable in different ways, since they are given value or meaning by the internally heterogeneous experiential domain. Although their exact number remains unclear, there are only a few very basic image schemata, such as VERTICALITY-HORIZONTALITY, CENTER-PERIPHERY, PATH-GOAL, CONTAINER, and – the most significant one for the purpose of this project – PART-WHOLE. Moreover, it is heuristically helpful to visualize image schemata, which is possible due to their basic and spatial-geometrical nature. All of these aspects hold true for the PART-WHOLE image schema, the existence of which is ascribable to the experience of our bodies as being wholes with parts and our perception of basic-level objects.²⁵ Apart from 'parts' and 'whole', this image schema also includes the 'configuration' of parts and whole as a main parameter. Complementary to Lakoff's original characterization of the PART-WHOLE image schema, I argued that in the case of perceptible moments and perceptible, dependent

²¹Cf. subsection 4.2.2.

²²Cf. subsection 4.2.3.

²³Cf. subsection 4.2.4.

²⁴Cf. subsection 5.1.1.

²⁵Cf. subsection 5.1.2.

wholes, the mereological notions of irreflexivity and asymmetry are weakened. This is because a dependent whole is, in a certain sense, part of its parts, i.e. 'in' its parts, in order to find completion and thus to exist. I illustrated this in the context of sports, in which the whole of our body is ideally and, of course, non-physically 'in' some of its parts in order to function properly. To me it seems undeniable that sport-related body-environment interactions are one of the main reasons for the development of image schemata, among others for the PART-WHOLE image schema. In addition, I suggested two ways to visualize the PART-WHOLE image schema: a *mosaic* structure for this image schema in general, and a *fractal* (e.g. the Sierpinski triangle) for the PART WHOLE image schema in the case of PWO in particular. In a fractal, which is omnipresent in nature and is thus anything but an artificial visual model, we can see exactly that and how it is possible for a whole to be (on a different scale) and simultaneously not be (on the same scale) part of or 'in' its parts, relative to the scale and the perspective in which we regard the particular part-whole structure. Finally, I argued that whereas the more general mosaic-like PART-WHOLE image schema can lead to conceptual metaphor if its parts are interpreted as independent from their whole, the fractal-like PART-WHOLE image schema for PWO only leads to conceptual metonymy, the introduction of which could then take place. But already this development of the general and particular PART-WHOLE image schema resulted in a first positive characterization of PWO's ontological nature for the inductively studied realm of empirical, ordinary language: PWO_{ind_lang_1}.

The other two characterizations, PWO_{ind_lang_2} and PWO_{ind_lang_3}, followed from a closer look at what conceptual metonymy entails.²⁶ As a figure of language, metonymy has always stood next to metaphor as one of the main poetical tropes. Unlike conceptual metaphor, which has commonly been regarded as a cross-domain *is-like* relation (entity x from domain A is like entity y from domain B , therefore the word for x can be mapped into B to describe y), the idea behind conceptual metonymy is the establishment of a domain-internal *stand-for* relation (entity x from domain A stands for entity y from domain A , therefore the word for x can stand for y). Thus whereas conceptual metaphor resembles a cognitive copy-and-paste process from one experiential domain into another, conceptual metaphor resembles a shortcut within the same experiential domain.²⁷ However, I argued that an understanding of conceptual metonymy as a stand-for relation is misleading if this presupposes that the entity x that stands for y supersedes y such that y is not cognitively present anymore.²⁸ The remarkable aspect of conceptual metonymy is exactly the co-activation of x and y , in particular because x and y are identifiable with 'part(s)' and 'whole' within one and the same experiential domain.²⁹ This co-activation of part(s) and whole implies that when we make use of a metonymy in ordinary language, we both have in mind what we say *and* what we mean, whereby what we say (part/whole of an entity, e.g. 'potato soup'/'Washington') is cognitively *backgrounded* and what we mean (whole/part of an entity, e.g. 'customer'/'president') is cognitively *foregrounded*. In contrast to the unidirectional

²⁶Cf. section 5.2.

²⁷For example, in 'the potato soup wants to pay', the soup refers to the customer within one and the same restaurant setting.

²⁸Cf. subsection 5.2.1.

²⁹For example, in the experiential domain 'restaurant', the 'potato soup' is part of the customer, which is why this part can stand for the whole (without superseding it). The same is the case the other way round: A whole can stand for the part (e.g. in 'Washington declares war on China', Washington as a whole stands for the US-American government / president).

process of conceptual metaphor, in conceptual metonymy we thus establish a bidirectional, i.e. alternating process of *backgrounding* and *foregrounding* of interdependent parts and whole, which is made possible by the existence of the PART-WHOLE image schema. Source (part/whole) and target (whole/part) are co-activated, hence PWO_{ind_lang_2}. Conceptual metonymy thus identifies exactly, applied to embodied language and in the framework of cognitive linguistics, the notion of PWO as it was formally derived in PWO_{ded}. Furthermore, as I was able to show by comparing metonymy with the traditionally close notion of synecdoche, with metonymies we refer to objects in reality and are therefore using paronomies to gain mental access to real-world part-whole structures. Synecdoche on the other hand refers to mental classifications into genus and species (taxonomies). The identification of PWO with conceptual metonymy is thus an indication of its reality-directedness. This aspect at least points to the assumption that dynamic, bi-directional part-whole relations are not merely subjective constructions, but could indeed be a basic and – via our bodies – internalizable aspect of reality itself, hence PWO_{ind_lang_3}. One of the questions that arose from these determinations within the realm of ordinary language and that led to the second part of the ‘inductive’ method was how do we perceive such structures, i.e. how does PWO empirically appear in the experiential domain in order to be linguistically expressed as metonymy?³⁰

In the sixth and seventh chapters I then approached this question by giving the most famous empirical research on part-whole perception, viz. Gestalt theory, an ontological reading.³¹ In so doing, I focused on the issue of what in Husserlian terms could be called a ‘material ontology of dependent part-whole structures’, because it was in this direction that Husserl’s formal ontology was sending us for the further determination of PWO’s ontological nature. Prior to any deeper analysis, there appeared to be three possible constellations for dependent part-whole structures: firstly, a perceptible whole that is dependent on its parts but not vice versa; secondly, perceptible parts that are dependent on their whole but not vice versa; and thirdly, an interdependence of perceptible parts and whole.³² My aim was to identify these three basic possibilities in the literature on empirical Gestalts. Of course, the literature on Gestalts is more than extensive, which on the one hand necessitated focusing on certain key thinkers and concepts in order to give my ontological reading a historically original basis. On the other hand, I did not want to ignore contemporary research on this matter to include more unconventionally original findings on part-whole perception. As a solution, I related the first and the second possibility to rather traditional approaches in the sixth chapter, while I postponed the consideration of theories on part-whole interdependence to the seventh chapter.

The first traditional approach on part-whole perception under the label of ‘Gestalt’ was that of C. von Ehrenfels. Drawing on his famous essay ‘On Gestalt Qualities’, I demonstrated how his thoughts and experiments on this matter presuppose a one-sided part-whole dependency in which the whole depends on its parts.³³ What he calls a ‘Gestalt quality’ is just a perceptual part (with an unclear ontological status) that is added to more basic stimulus parts. The resulting whole, although it is transposable when the parts (but not their interrelations) undergo change, is reducible to these parts and therefore hinges on their existence. Remarkably and not far away

³⁰Cf. section 5.3.

³¹Cf. section 6.1.

³²Cf. section 6.2.

³³Cf. subsection 6.2.1.

from Husserl's reflections on these subject matters, Ehrenfels extended the validity of his theory on Gestalt qualities far beyond the realm of perception up to metaphysical and theological heights.³⁴ He also embedded Gestalt-like part-whole relations in a vertical hierarchy of emerging wholes,³⁵ addressed the problem of infinite proliferation,³⁶ and included the dimension of time into the emergence of wholes with Gestalt qualities. Ehrenfels thus anticipated significant ontological aspects of part-whole structures, aspects on which I built in chapter 7. For the further ontological determination of PWO, however, the primacy he ascribed to parts but not to the whole proved to be insufficient to do justice to PWO's bidirectional nature as it had been identified in and determined with the notion of conceptual metonymy. The reversed insufficiency also arose, to cut a long story short, after a consideration of the Berlin school's accentuation of the whole's primacy over its parts,³⁷ whereby now the whole itself is the 'Gestalt' and not just one of the whole's parts or a part's quality.³⁸ I showed how this one-sided primacy is postulated with the laws of grouping,³⁹ in particular with the 'meta-principle' of *Prägnanz*,⁴⁰ according to which the parts of a perceptual whole tend towards order and stability such that this tendency is determined by the whole itself. Whereas, in line with the Berlin school, I criticized the Ehrenfelsian 'parts first' point of view, I also raised doubts about the reversal of this view into a 'whole first' approach. Nonetheless, in these two perspectives I was able not only to discover certain caveats, but also essential building blocks for the further determination of PWO's ontological nature.⁴¹ I concluded that it was only in a combination and enhancement of these two stances' one-sided take on part-whole dependency that the understanding of a 'Gestalt' could entail the bidirectional dynamics of conceptual metonymy's ongoing process of *foregrounding* and *backgrounding*.

The seventh chapter then circled around the question of how we can think of a 'Gestalt' as a structure in which both parts and whole are equally important, dependent on each other, and necessary for the singularity of their own *and* the other's existence. To embark upon this question, I focused both on recent research and on this project's parameter *meaning*, here understood, in accordance with the applied 'inductive' method, as perceptual meaning. Therefore, it seemed to be promising to begin with B. Pinna's recent research on how Gestalt structures are perceived as meaningful.⁴² Pinna basically shows that perceptual meaning emerges not when the whole is as perfect and orderly as possible, but rather when something is 'happening' to it: when (at least one of) its parts are deforming, (dis-)appearing or reassembling. This has an immediate effect on the character of the whole itself, in the same way as the character of the whole has an immediate effect on its parts. In order to perceive and recognize a meaningful Gestalt, we thus have to turn from the concise whole to its parts and from them to a higher meaning-whole that now comprises both parts, whole and their reciprocal generation of meaning through happenings.⁴³ Pinna argues that a whole is complete on an amodal and

³⁴Cf. subsection 6.2.2.

³⁵Cf. subsection 6.2.3.

³⁶Cf. subsection 6.2.4.

³⁷Cf. section 6.3.

³⁸Cf. subsection 6.3.1.

³⁹Cf. subsection 6.3.2.

⁴⁰Cf. subsection 6.3.3.

⁴¹Cf. section 6.4.

⁴²Cf. section 7.1.

⁴³Cf. subsection 7.1.1.

homogeneous level, whereas it is, at the same time, incomplete on the modal level in which it shows itself via the heterogeneity of and influence exerted by its parts. Although these research findings allowed me to derive the first characterization of PWO's ontological nature for the realm of empirical perception ($PWO_{ind_emp_1}$), I found Pinna's final preference for a meaningful whole in which both a grouped whole and its parts are combined unsatisfactory. In lieu thereof, I sought a conception of parts and whole in which both sides preserve their partial nature, thus, in which their difference is not transformed into an ultimate, again regulatory *unity* of perceptual meaning.⁴⁴ As in the Gestalt tradition, the postulation of such a unity would presuppose an ontological hierarchy in which the whole ultimately ranks higher than the parts. Although such a vertical hierarchy is typical for moments, as we saw in the discussion of Husserl's formal ontology, I found it insufficient for the development of a part-whole structure in which one side ranks only relatively and temporarily, but not absolutely higher than the other. An alternative to this vertical hierarchy had to be found, without, however, falling back into the atomism of a flat part-whole ontology of independent parts. Furthermore, more precise accounts were needed both of the threshold on which the co-creation of meaning between an homogeneous whole and its heterogeneous parts takes place and on what the concept of emergence entails when it comes to meaningful part-whole structures.

These three desiderata were approached in sections 7.2, 7.3 and 7.4, in each of which I developed one further characterization for the final determination of PWO's ontological nature. In section 7.2., I elaborated on the co-creation of perceptual meaning in part-whole interactions by looking at J. Koenderink's notions of 'splitting' and 'merging' and their function in what this author describes as 'visual awareness'.⁴⁵ One of the major aspects of visual awareness is our ability to let a perceived object develop over time in front of our eyes, i.e. to discover its ambiguities and 'multiple worlds' of appearing. The fact that we are able to, by way of analyzing, 'split' a Gestalt and focus on its parts, but also 'merge' the parts and, by way of synthesizing, shift towards its wholeness, is one of the possibilities we have in our visual awareness to explore the multiple worlds in which a Gestalt can appear. Consciously and unconsciously, these acts of splitting and merging, the possibility of which is given by the percept itself and its inexhaustible richness of meanings, are acts through which perceptual meanings emerge.

After having formulated $PWO_{ind_emp_2}$ by means of splitting and merging and to find out more about emergence, in section 7.3 I turned to contemporary reflections on this concept. I wanted to explore the possibility of an appropriate ontological model for the emergence of meaning through (the perception of) part-whole interactions. With this ontological model of emergence, I also tried to avoid Koenderink's radical constructivist interpretation of visual awareness as a 'user interface'.⁴⁶ In contrast to being reducible to subjective cognition, models of emergence are usually based on a variety of ontological domains, in and beyond the organic world, and therefore have a very comprehensive 'setting in reality' or at least 'ontological neutrality'.⁴⁷ To find an adequate model of emergence for PWO, I firstly distinguished ontological emergence from epistemological emergence, whereby only the former denotes the coming into existence of novel

⁴⁴Cf. subsection 7.1.2.

⁴⁵Cf. section 7.2.1.

⁴⁶Cf. subsection 7.2.2.

⁴⁷Cf. section 7.3.

properties and entities. Then I showed how emergentist theories usually rely on a hierarchical model in which what is novel ranks higher than that from which the novel property or entity emerges. In addition, I delineated the concept of 'downward causation', according to which the emergent property or entity exerts an influence on the basis (i.e. the parts) from which it has emerged.⁴⁸ To suggest an adequate model of emergence for PWO, I introduced the recent model of R. Anjum and S. Mumford, which implements both ontological emergence (in contrast to epistemological 'as-if' emergence) and describes downward causation as 'demergence'.⁴⁹ Theirs is a model in which both the emerging whole and the parts from which it emerges stand in a 'causal-transformative' relationship with each other and undergo changes already in the simultaneously active processes of emerging and demerging. In so doing, novelty is created both in the whole *and* in the parts, which, if integrated into the determination of PWO, would equip the latter with a potential of meaning-generating creativity that is guaranteed by the constancy of the oscillation between parts and whole. Although I therefore embraced the causal-transformative model of emergence / demergence (PWO_{ind_emp_3}), the hierarchy of unification (upwards) and differentiation (downwards) it presupposes was still insufficient.

In the final argumentative step, I thus found it necessary to suggest a re-thinking of the hierarchy in which part-whole structures are generally conceptualized. To suggest a dynamic and adapting rather than a static and pre-established hierarchical form, I came back to Gestaltist research on figure and ground. Figure and ground can be understood as a stable relation between foreground and background, but also – and here the more interesting side of this phenomenon resides – as an ambiguous relation the alternation of which allows us to regard a percept (a Gestalt) as 'multistable'.⁵⁰ What I wanted to do in section 7.4 was to investigate whether figure-ground ambiguity and its internal movements of foregrounding and backgrounding could be applied to part-whole structures in order to show that the latter are often equally ambiguous. In this ambiguity, it can be the whole, but also (one or more of) its parts that rank higher; in other words, upwards and downwards are applicable both to unification and to differentiation, because the hierarchy in which meaningful part-whole structures are unfolding is itself reversible, like the ambiguous phenomena it models. Although I could not introduce a concrete hierarchical model for this idea, I demonstrated the general possibility and justification via a rethinking of the figure-ground phenomenon within the framework of an Interactive Realism. Due to its universal nature, this framework would also include ambiguous part-whole structures and the ways we experientially interact with them, hence PWO_{ind_emp_4}. To conclude chapter 7, I finally suggested using the term 'Gestalt quality' in the spirit of Ehrenfels to refer to novel (perceptible) parts, 'Gestalt' in the spirit of the Berlin school to refer to novel (perceptible) wholes, and 'Gestaltung' in the spirit of the theories introduced in chapter 7 to refer to the co-creative interaction of (perceptible) parts and whole.

Now, to conclude this project as a whole, let me combine the seven partial characterizations and suggest one – of course only preliminary and developable – determination of PWO's ontological nature. Subsequent to the previous interdisciplinary argumentation and terminology, such a determination might be formulated as follows:

PWO_{ont_nat}: A part-whole oscillation (PWO) is the dynamic interplay of dependent parts (mo-

⁴⁸Cf. subsection 7.3.1.

⁴⁹Cf. subsection 7.3.2.

⁵⁰Cf. subsection 7.4.1.

ments) and their whole, which is dependent on these parts, within or rather *as* the same entity. It happens when both sides are regarded as being continuous and discontinuous at the same time. During their fusion, both moments and whole are inseparable yet distinguishable. They stand out alternately, and the entity in question displays both the qualities of the moments and the potentially different or even contradictory qualities of the whole. This interplay occurs in at least two domains that are covered by a 'material ontology' and approachable inductively: in *ordinary language* as (conceptual) metonymy, understood as whole-to-part and part-to-whole mapping, and in *empirical perception* as an interdependent part-whole structure with emergent and demergent meanings ('Gestaltung'). In both cases, the experience of PWO relies on our embodied being-in-the-world, i.e. on the PART-WHOLE image schema, which is structured like a mosaic and can display the more specific form of a fractal, and the ways we internalize it by way of perceiving reality. This precludes any ontological separation of mind, body and world. Also in both cases, parts and whole alternate in a bidirectional process of *foregrounding* and *backgrounding*. This precludes any postulation of static hierarchical models in which wholes would invariably rank higher than parts. In perception, PWO manifests itself as a happening of the parts to a whole, which involves the perceptual acts of splitting and merging and enables access to perceptual meaning(s) as meanings *of* the percept *for* the perceiver. In all cases, PWO denotes the internal ambiguity and multistability of interdependent, dynamic, and meaning-generating part-whole structures.

Taken as a whole, this determination of course depends on the parts from which it had been derived in the previous chapters. Whereas, in being a determination, it determines these parts such that they fit into it as their whole, it can hardly be understood and would not exist without them. However, this determination can also be regarded as an indeterminate part that is dependent on a more embracing whole in which it might fulfill a certain function. This is what I mentioned in the introduction to this project: the development of PWO_{ont_nat} is less an end in itself, but rather the suggestion of a flexible building block for more embracing theories, in particular theories that are, by the same token, parametrized with *meaning*, *reality*, *part-whole*, and/or *experience* in any possible pairing and binding. In so doing, PWO_{ont_nat} itself could, of course, be adapted and re-determined, in the same fashion as it would influence the theoretical framework in which it finds completion without losing its intrinsic character. The research result of the present project is thus classifiable as a philosophical open-source structure. As such, it is not only due to other equally 'open' and developable theories on which I have drawn, but it is also ready to be picked up for critical improvements, both of itself and of the frameworks into which it might be integrated.

There are several possibilities for integration, all of which could be the subject for follow-up research. For example, in relation to the parameter reality, one urgent question concerns the *ontological status* of PWO: Where does this dynamic 'in-between' of parts and whole exist and where does it not, or is its existence reducible to one or another of the following exemplary domains: the physical world; our nervous system; our imagination; sociocultural conventions; language; an ideal realm of ideas to which we have access? One theory of the Gestalt tradition in which we could find answers to this question would be W. Metzger's 'Levels of Reality',

which is a critical realism according to which we do not have epistemological access to the physical world (first level of reality, the Kantian 'an sich'). Nonetheless, meaningful wholes (Gestalts) would be real (second level of reality), because they are encountered as immediately intuitive, and are therefore not reducible to our imagination.⁵¹ Would the same be the case for PWO, or is this phenomenon rather pure appearance (*Schein*), devoid of any serious grounding (fifth level of reality)? Alternatively, a theory that pairs reality and experience and that also concentrates on the ontological status of Gestalts is Arne Næss' so-called 'Gestalt Ontology'. He provides an almost panpsychic picture of reality, in which it is secondary and tertiary qualities that really exist, whereas primary qualities are only a product of our mind. The existence of the former is irreducible to empirical perception and phenomenological experience; it is rather a network of 'relational fields' of which an experiencing subject can be a dependent part.⁵² How is such a relational field to be conceived, and how could the notion of PWO contribute to its clarification? Furthermore, we could now pair *experience* and *part-whole* by turning to H. Rombach's *Strukturontologie*, in which he firstly develops on phenomenological grounds a formal ontological framework of interdependent part-whole structures, before he applies this framework to – among others – the meaningfulness of anthropological situations.⁵³ In particular, Rombach's reflections on the presence of a whole within its parts could shed further light on this conceptually difficult to grasp aspect of PWO. Also, his notion of 'con-creativity' seems to be suitable to further determine the creative dimension in which parts and whole generate novelty via interaction. Lastly, we could connect *experience*, as the experience we have in 'productive' or 'creative' thinking, with *part-whole* in order to relate PWO to M. Wertheimer's and K. Duncker's concept of 'restructuration' of a given part-whole structure.⁵⁴ Would it be possible, for example, to improve our capacity of problem solving by actively switching back-and-forth between parts and whole, such that – as argued in section 7.3 – via the processes of emergence and demergence, novel sides of an object become visible with which we can solve a given problem? These are thus some of the ways in which what I determined under the label of 'PWO' could be further processed, integrated and enhanced.

The core message of this project, however, is not exhausted by its connectivity to other theories and research topics. Whereas further research entails a 'continuation' of the notion that has been determined as PWO, i.e. a co-creative 'fusion' of it with more comprehensive frameworks, we should also keep in mind the idea that even dependent parts are able to stand out in their own right and thus be 'discontinuous'. At least in the domain of experience, which includes empirical perception but also other forms of experience about which I did not write, discontinuity is as important and omnipresent as continuity. One constantly leads to the other. If we now, at the very end, single out PWO_{ont_nat} both from its moments (the seven partial characterizations) and the future wholes in which it could be embedded, then what is the core message that appears in the foreground? It appears that even when we deal with a notion that is as general and seemingly fixed – and thus as ontological – as part-whole relations, it is beneficial to become aware of the hoard of meanings that lie within the possibilities and instantiations of such a category. To gain access to some of these meanings

⁵¹Cf. on Metzger's theory Brandt et al. [1969], [Metzger [1974; 2001] and Ash [1995: 373–5].

⁵²Cf. Næss [2005d; 2005a; 2005f; 2005b; 2005c; 2005e], Rothenberg [2000], Diehm [2006] and Stadler [2016].

⁵³Cf. Rombach [(1987; 1988; 1994; 2003; 2010), Blaschek-Hahn et al. [2010] and Stadler [2014; 2015].

⁵⁴Cf. Wertheimer [1925; 1959] and Duncker [1926; 1945].

and thus to recognize the internal richness of every interdependent part-whole structure, it is not only necessary to rethink the category's fixations, and with these the definition of what 'ontology' as a discipline is and could be in matters of content and methods. It is also beneficial to keep in mind that, on closer examination, what is given to us by reality in terms of part-whole structures is only experienceable when we ourselves take part in it. In so doing, we incorporate the whole in question and ideally find completion through it. No completion has ever been absolute, however, which is why the quest for holism entails all the advantages and disadvantages an illusion brings with it. Instead of an ongoing continuity with a whole, it is actually the experienced discontinuity as a part that makes us feel free to switch the wholes or to create new wholes with different potentials of temporary completion. We can always go in the direction of these wholes with a readiness to fuse, but only until the tension to be self-reliant makes us oscillate back to the state of (dis-)continuing as a part. The notion of PWO determined here can make us aware of the fact that there is an open world of – more or less satisfying – existence conditions and – more or less determining – wholes for us to explore.

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The nature of structures comprising part-whole relations belongs to the oldest, most fundamental and still discussed questions of philosophy. Unlike many former approaches, which either give priority to the parts or to the whole of such structures, the present book is an ontological, psychological, and cognitive-linguistic investigation that suggests an alternative to a hierarchical conception of parts and whole with a one-sided dependency relation. This alternative is called 'part-whole oscillation' and is developed on a formal as well as empirical basis.

Die Beschaffenheit von Strukturen mit Teil-Ganzes-Verhältnissen gehört zu den ältesten, fundamentalsten und stets relevanten Fragen der Philosophie. Im Gegensatz zu früheren Herangehensweisen, die entweder die Teile oder das Ganze priorisieren, beinhaltet das vorliegende Buch eine ontologische, psychologische und kognitiv-linguistische Untersuchung, die eine Alternative zu einseitigen hierarchischen Abhängigkeitsverhältnissen zwischen Teilen und Ganzen vorschlägt. Diese Alternative wird „part-whole oscillation“ genannt und auf formaler sowie empirischer Grundlage entwickelt.

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