

Formation or Transformation? The 4th Millennium BC in the Aegean and the Balkans

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Abstract: Fortified settlements, rich, organised necropoleis and elaborate metalworking, which traditionally mark the start of Early Bronze Age, appear in western Anatolia at the end of the 4th millennium BC as new occurrences. However, in the Aegean and the Balkans, these features were already present, to different degrees, during the 5th millennium BC, and frequently at those very same areas (and even at the same settlements) where they reappeared little before 3000 BC. Therefore, the question is advanced here in a quite different way than in Anatolia: rather than speaking about ‘formation’, we could speak about ‘transformation’. But how do societies pass from one socio-economic order to the next? Is there a critical point in this transformative process, and if yes, where should this be situated? At the end of the 5th millennium BC, when most of the settlements that flourished in the preceding period are abandoned, or during the early centuries of the 4th millennium BC, when external influences seem to grow, especially in the northern part of the Balkans? Perhaps during the period around 3500 BC, when northern trends reach the Greek peninsula, or as late as 3300 BC, when the redistribution of settlements is materialised (and when, incidentally, western Anatolia enters the scene again)? The paper discusses the different aspects of these phenomena, focusing on the chronological order of the events, as it is established through recent research, and on the geographical distribution of some key sites between the lower Danube and the Cyclades in relation with their environmental background. We also insist on the question of archaeological (non)visibility, which is essential for our understanding or misunderstanding of these major transformations.

Keywords: Aegean, Balkans, 5th millennium BC, 4th millennium BC, social transformation, chronology, radiocarbon

Aegean and Western Anatolia: Two Different Trajectories

Settlements with ‘urban’ features, such as fortifications, differentiation in the use of space (e.g. workshops) presumably reflecting a differentiation among social groups, and exchange networks for raw materials and finished products (including metals), appear in the Aegean and southern Balkans and in western Anatolia at the end of the 4th millennium BC. During the same period, organised cemeteries, with relatively well built tombs eventually containing rich offerings, are also present in both areas. These phenomena are fully established by approximately 3000 BC (phase Troy I = Anatolian EBA I = Aegean EBA II), but their emergence clearly starts a few centuries earlier, in the years 3300–3200 BC (phase Kum Tepe II = Anatolian Late Chalcolithic = Aegean EBA I). Although disparities in terminology could suggest that the situation is different in the two areas,² nearly all scholars agree that the two regions evolved in parallel and that we are dealing with two stages of the same development.³ What differentiates the two regions, however, is what precedes these developments.

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² The question of discrepancies in the relative chronology and the consequences for our interpretation of the historical phenomena behind the terms used is recurrent in the local, as well as in the broader archaeological literature. It will not be further developed here.

³ The convergence between the two was one of the initiatives, and also one of the main outcomes of the symposium behind the present volume. For similar initiatives, see Erkanal et al. 2008; Şahoğlu – Sotirakopoulou 2011.



A. Palioskala, Thessaly (courtesy G. Toufexis)



B. Skarkos, Cyclades

Fig. 1 Examples of late 5th and late 4th/early 3rd millennium settlements in the Aegean-Balkan area.

Indeed, in the Aegean and the Balkans, most of these features were already present, to various degrees, in the 5th millennium BC, frequently at those very same areas (and even at the same sites) where they reappear little before 3000 BC. Settlements, such as Sesklo and Dimini in Thessaly, Mandalo and Dikili Tash in Greek Macedonia, Yunatsite and Ezero in Thrace, or the recently excavated Provadja in northeastern Bulgaria and Strofilas in the Cyclades, remind of the more developed sites of the Early Bronze Age (Troy, Poliochni, Skarkos, Myrtilos, etc.) regarding the architectural forms as well as the wealth and variety of materials present.⁴ The same holds true for cemeteries, whether one takes Varna, with its ca. 300 tombs and its 6kg of gold, or the much more modest necropolis of Kephala on Kea, which prefigure the EBA cemeteries in Cyclades (Pelos, Chalandriani), Euboea (Manika), Attica (Agios Kosmas, Tsepi), and elsewhere (Figs. 1–2).⁵ Nothing comparable is known from western Anatolia, where evidence for 5th millennium sites is almost completely absent.⁶ Even if we accept that this is partly due to poor or maladapted research, it is still a fact that, under the present circumstances, the EBA phenomena in the two regions display very different backgrounds. Thus, in western Anatolia one is compelled to discuss the formation, i.e. the emergence of a new social system, whereas in the Aegean and southern Balkans a transformation process seems possible as well.

On the other hand, the occurrence of similar phenomena in the same area separated by 1000 years is not necessarily evidence for a relationship between the two; one has to prove that there is some kind of derivation, and not just analogy. This begs the question of whether there is a relationship between the 5th millennium and the late 4th millennium BC phenomena in the Aegean and the Balkans. And if so, what kind of relation this is.

The Relation between the Neolithic/Chalcolithic and the EBA Phenomena in the Aegean and Southern Balkans

The answers to this question, thus far, are quite contradictory (Fig. 3).⁷ In the north, especially in Bulgaria, the dominant version is that of discontinuity. Indeed, most scholars believe that there is a cultural and demographic collapse towards the end of the 5th millennium BC (the end of the local Kodžadermen-Gumelnița-Karanovo VI and Krivodol-Sălcuța-Bubanj Hum Chalcolithic ‘cultural complexes’, hereafter respectively KGK-VI and KSB), which is followed by an occupation gap of several centuries in the region (‘Transitional period’).⁸ This hypothesis is based on evidence from a large number of more or less contemporaneous destruction episodes of previously flourishing settlements, especially tells, and subsequent lengthy abandonment (up to one millennium according to the ¹⁴C dates, for example, in Karanovo and Ezero), or permanent abandonment (e.g. at Ovčarovo, or Goljamo Delčevo).⁹ Rich cemeteries disappear as well, and many specialised crafts are lost (high-quality decorated pottery, figurines, metalworking). The few new sites recorded are smaller and poorer than those of the preceding period, and also established in new locations, especially caves and flat open-air sites in highlands and river terraces. This remodelling of the social and cultural landscape is interpreted as the result of

⁴ No detailed bibliography is given, since most are reference sites that are well known to the archaeological community. For those excavated more recently, see Televantou 2008; Televantou 2009 (Strofilas); Nikolov 2012 (Provadja).

⁵ Again no detailed bibliography is given. For the Aegean, one can always refer to the synthesis of Cavanagh – Mee 1998, and recent manuals, such as Treuil et al. 2008; Cline 2010. For the Balkans, the last synthesis is the one by Nikolova 1999.

⁶ State of research in Düring 2011; see also contributions in the present volume.

⁷ See also Tsirtsoni 2010; Tsirtsoni (forthcoming a; forthcoming b).

⁸ See, among others, Todorova 1978; Boyadziev 1995; Todorova 1995; Bojadziev 1998; Bailey 2000, 240–262; Merkyte 2007, 39–57; Anthony 2010; a very useful critical synthesis is also given by Ivanova 2008.

⁹ For absolute chronology in prehistoric Bulgaria, see Boyadziev 1995; Görsdorf – Bojadziev 1996; Bojadziev 1998.

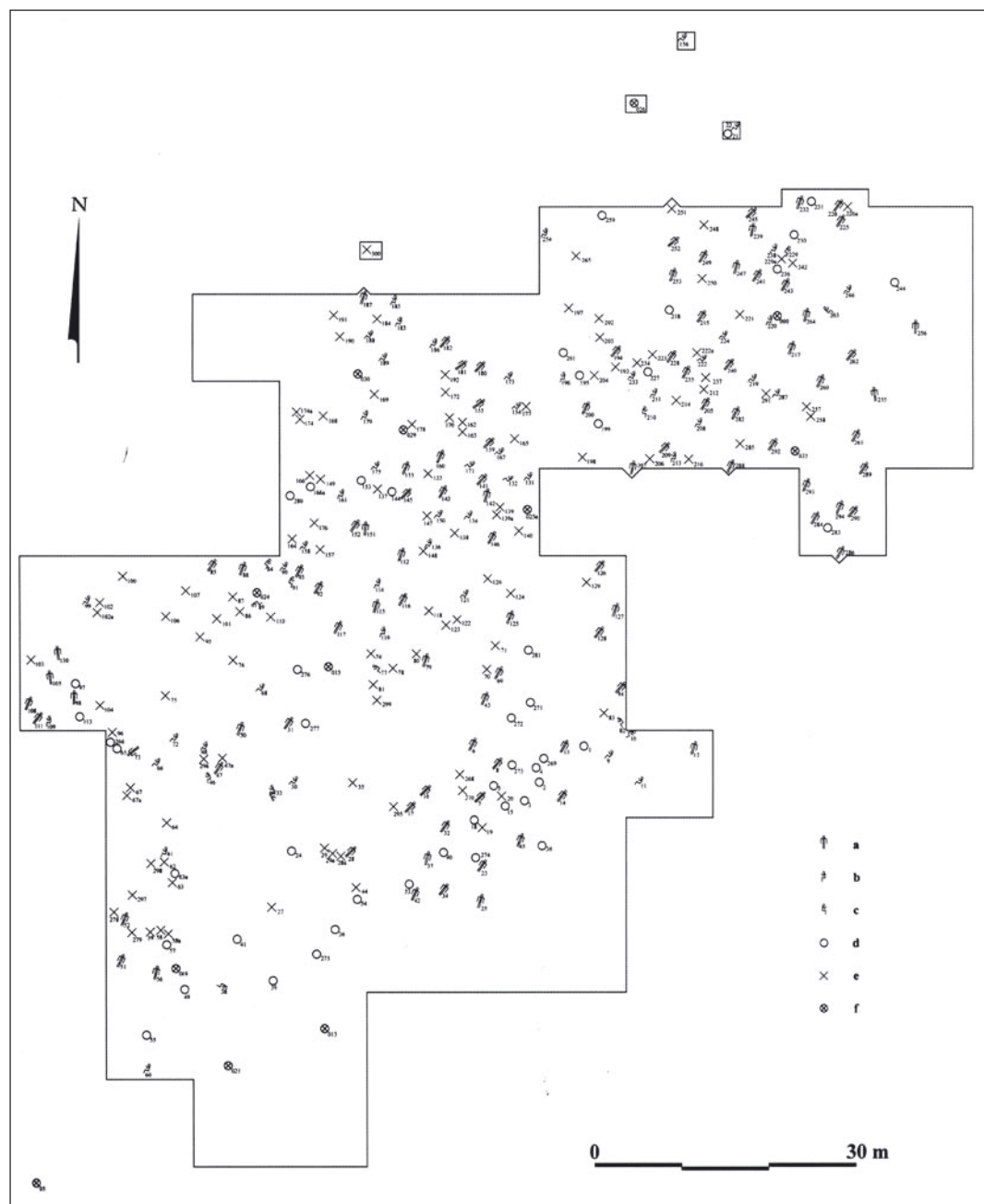


Fig. 2 Examples of late 5th and late 4th/early 3rd millennium cemeteries in the Aegean-Balkan area: A. Varna, NE Bulgaria (after Slavchev 2010, fig. 9.10).

important environmental (climatic) changes¹⁰ or invasions,¹¹ which, according to the available radiocarbon dates, would have first affected the eastern lowlands (i.e. the area of the eastern cultural complex KGK-VI, before 4000 BC), then the northwestern part of the country (i.e. the area of the KSB Culture, towards 3900/3800 BC). The Early Bronze Age appears five or six centuries later as something radically new and almost completely exogenous, with only a few

¹⁰ Todorova 1995, 89–90; Weninger et al. 2009, 34–44. The local changes would associate with the 6–5.2 ky calBP Rapid Climate Change event.

¹¹ Boyadziev 1995, 173; Bojadziev 1998, 358–359. The steppes invasion hypothesis was formulated by M. Gimbutas, prior to the introduction of radiocarbon dating in the area.

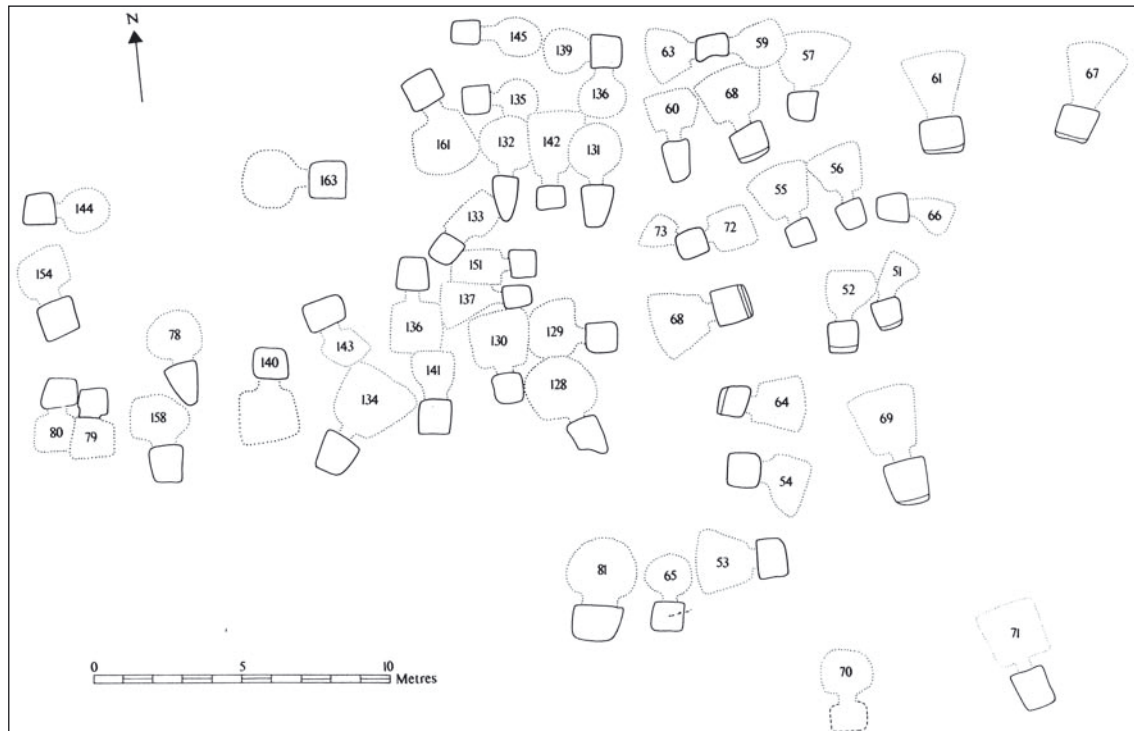


Fig. 2B Manika, Euboea (after Cavanagh –Mee 1988, fig. 3.13).

exceptions of early infiltrations and/or mixing with earlier ‘survivors’ near the northern frontier of the country (cultures of Cernavodă I, Galatin, Peveč, etc.). The new EBA cultural formations are classified into two main entities, the ‘Pit Grave’ Culture to the north and the Ezero Culture to the south, one deriving directly from the steppe regions north of the Black Sea, the other connected with the developments in western Anatolia and northern Aegean. Both show further affinities with the EBA phenomena in the central Balkans (Boleráz, Baden), which are presumed to reach the country with the newcomers.¹²

On the contrary, in Greece the transition from the Neolithic to the EBA is generally regarded as a smooth process with minor external influence.¹³ It is designated by the term ‘Final Neolithic’ or ‘Chalcolithic’, spans 1500 years (from the late 5th to the early 4th millennium BC) and links the achievements of the two periods.¹⁴ Here too, there is evidence for a break in occupation, especially in some tell settlements with long sequences, like Mandalo, the first where the existence of a long gap was pinpointed through radiocarbon dating 30 years ago.¹⁵ Similar data from other

¹² Panayotov – Dergachov 1984; Alexandrov 1995; Panayotov 1995; Nikolova 1999.

¹³ The only exception so far is Coleman 2000, who adopts the idea of a cultural and demographic collapse at the end of the 5th millennium, followed by the arrival of new populations (the Greeks) at the mid-4th millennium. However, his ‘scenario’ (this is his term) has not met much approval. He rediscussed it recently: Coleman 2011.

¹⁴ Treuil 1983; Coleman 1992; Alram-Stern 1996, 95–101; Andreou et al. 1996; Dimakopoulou 1996; Alram-Stern 2007. The term ‘Final Neolithic’ has been heavily criticised since its launch by C. Renfrew (1972), it seems to be, however, the one preferred by most English-speaking scholars. ‘Chalcolithic’ is the term used by most scholars of the German school. The prolongation of the term ‘Late Neolithic’, either alone (Treuil 1983; Treuil et al. 2008, 61–62) or subdivided into further stages (Sampson 1993; Sampson et al. 1999), has been altogether less convincing and is only followed by a few. The recent tendency is in favour of a term that would imply more strongly the use of metals (Chalcolithic or Copper Age), with respect also to the periodization systems used in other neighbouring areas: see for instance Broodbank 2008, 285; Sherratt – Sherratt 2008, 292; and several papers in Hansen – Raczky forthcoming. The subsequent debate is to decide when this Chalcolithic or Copper Age period begins; see Aslanis 1992, and more generally Tsirtsoni 2010 and Tsirtsoni forthcoming a.

¹⁵ Maniatis – Kromer 1990.

Date BC	Periodisation (Balkan terminology)	Rhodopes Struma valley	Thrace	North-East Bulgaria	North-West Bulgaria	Periodisation (European terminology)	Former Youg. Macedonia, Serbia
5400	Middle Neolithic	Balgarčevo II Damjanica I–II	Karanovo III	Usoe	Kurilo	Middle Neolithic	Vinča A, Anzabegovo IV
5200	Late Neolithic	Balgarcevo III Damjanitsa III Promachon- Topolnica	Karanovo IV	Hamangia I–II			Vinča B
4800	Early Chalcolithic Middle Chalcolithic	Slatino	Marica I–IV Karanovo V	Hamangia III Hamangia IV	Gradeshnitsa	Late Neolithic	Vinča C
4500	Late Chalcolithic		Karanovo VI	Varna Gumelnița	Krivodol-Sălcuța	Early Chalcolithic (or Copper Age)	Vinča D Crnobuki I–II Bubanj Hum Ia
4000	Transitional (Final Chalcolithic)	Kolarovo Yagodina					Crnobuki III Bubanj Hum Ib
3800	Proto-Bronze			Cernavoda I Pevec Hotnica- Vodopada	Sălcuța IV Galatin		
3300	Early Bronze Age		Ezero A	‘Pit graves’	Magura	Middle Chalcolithic (or Copper Age)	Baden
2800		Kovačevo	Ezero B Mihalic	Ezerovo	Coțofeni		Kostolac

Date BC	Periodisation (dominant Aegean terminology)	Periodisation (alternative Aegean terminology)	Crete, Cyclades Peloponnese	Thessaly	Macedonia, Aegean Thrace
5400	Late Neolithic I	LN Ia	Knossos V–VI Franchthi 3–4 Tharrounia Ia Saliagos I Ftelia	Tsangli-Larissa Arapı	Sitagri I Makri II Paradimi I–III Dispilio Dikili Tash I Makryghialos I Sitagri II
4800	Late Neolithic II	LN Ib	Knossos IV Saliagos II Tharrounia Ib	Otzaki Dimini	Paradimi IV Makryghialos II Sitagri IIIA Dikili Tash IIA–C
4500	(Final Neolithic or Chalcolithic)	LN IIa	Alepotrypa Knossos II–III Franchthi 5 Tharrounia II Kephala Athens Agora	Rachmani	Sitagri IIIB–C Kastri
4000		LN IIb		Petromagoula Mikrothives	Aghios Ioannis
3300	Early Bronze Age I	EBA I	Eutresis III–IV Grotta-Pelos	Pefkakia 1–2	Sitagri IV Dikili Tash IIIA
2800	Early Bronze Age II	EBAII	Eutresis VI–VIII Kampos-Syros	Pefkakia 3	Sitagri Va Dikili Tash IIIB

Fig. 3 Comparison of the periodisation schemes used in Bulgaria (upper table) and in Greece (lower table) for the Neolithic/Chalcolithic and Early Bronze Age periods (state of research prior to the ‘Balkans 4000’ program; various sources).

sites in northern (e.g. Sitagroi, Dikili Tash), as well as in southern Greece (e.g. cave of Kitsos in Attica, or Limnes in the Peloponnese), indicate that very few of the previously flourishing communities continued to be active during the first seven or eight centuries of the 4th millennium BC (ca. 4200/4000–3300/3000 BC).¹⁶ However, radiocarbon evidence is generally regarded as non-conclusive, and scholars working in Greece consider, whether implicitly or explicitly, that this could be a problem related to absolute dates, rather than a true hiatus.¹⁷ An increase in the use of caves and rock-shelters in relatively remote areas is sometimes connected with changes in the environment during the second half of the 5th millennium BC (i.e. approximately at the same period as in Bulgaria). It appears, however, that this tendency had already started in the first half of the 5th millennium, and many of these sites are abandoned in the late 5th or early 4th millennium as well.¹⁸ Settling new environments or locations that will be considered as the ‘hallmark’ of the Aegean EBA historical landscape, namely coastal sites and promontories, is a tendency that also starts in the early 5th millennium.¹⁹ The material culture displays several signs of change (e.g. some pottery styles, and free-standing clay figurines disappear), but these are taken to reflect internal evolutions rather than a collapse or forced acculturation.

The Chronological Issue and the ‘Balkans 4000’ Project

It is clear that the chronology of the events during the critical period that separates the last stages of the ‘mature’ Neolithic/Chalcolithic and the first manifestations of what is accepted to be the Early Bronze Age are at the core of the issue, and that no proper answer concerning the relation between the two can be put forth until a set of points are clarified.

The first issue at hand is the existence, or not, of a gap between the two series of events. Until recently, no more than 60 out of the c. 500 ¹⁴C dates available for the Late Neolithic/Chalcolithic and early EBA periods in Greece and Bulgaria fell within the time span 4000–3300 calBC, and many of those that did had very big statistical errors and could fit earlier (5th millennium) or later (late 4th millennium) spans as well.²⁰ On the other hand, this very same lack of precision, and even their rarity, which could be taken to reflect biases in sampling, left room for hope that a series of new measurements from better selected samples in the same or at other sites, could provide a different picture.

The second point is the extent and duration of the gap, as well as its eventual homogeneity, according to the type of sites, their location, or topography. Its pace or progression could also be of importance, as it might pinpoint the origin of the factors behind this gap.²¹

¹⁶ Coleman 1992, vol. 2, 204, fig. 2; Manning 1995; Johnson 1999; Alram-Stern 2007.

¹⁷ For instance: Treuil 1983, 139; Andreou et al. 1996, 558; Johnson 1999, 330.

¹⁸ Diamant 1974; Sampson 1993; Sampson et al. 1999; Mavridis 2006.

¹⁹ For instance, the well known settlements of Emporio or Tigani in the eastern Aegean, or the more recent Strofilas in the Cyclades (see footnote n. 4).

²⁰ Bulgaria: Görsdorf – Bojadžiev 1996; Greece: Coleman 1992; Sampson et al. 1999. The majority of the dates prior to 1990 had errors between 100 and 300 years BP, which provided intervals of one thousand calendar years or more after calibration. The quality of measurements has been considerably improved in the subsequent years, reaching values under 60–70 years BP in most laboratories.

²¹ The duration of the gap in Bulgaria has been used as a sign of the size of the collapse; see among others, Todorova 1995, 89–90; Weninger et al. 2009, 34–44. Regarding the significance of its progression, see also Boyadziev 1995, 173; Bojadžiev 1998, 358–359; Vajsov 2002, 161–164; Ivanova 2008, 164; Anthony 2010, 48–51. For a long time H. Todorova claimed that the gap started earlier in the south (i.e. in Greece) and that a hiatus existed between the Dimini-Dikili Tash II-Sitagroi III and Rachmani-Mandalo-Sitagroi IV ‘cultures’, corresponding roughly to the second half of the 5th millennium BC. This scheme has been used occasionally by other scholars (for instance Merkyte 2007, 42), despite the fact that it is not at all supported by the Greek evidence, neither in terms of cultural parallels (for the second part), nor in terms of chronology.



Fig. 4 Map of the Aegean-Balkan area with the sites dated in the frame of the 'Balkans 4000' program (background C. Finetin/P. Darque, UMR 7041, Nanterre); other sites are shown in grey.

These were the main concepts behind the launching, in 2007, of an ANR research program covering parts of the two countries, Greece and Bulgaria. Labelled ‘Balkans 4000: A la recherche du millénaire perdu’, this program focused on the presence or absence of a gap separating the last events assigned to the Neolithic/Chalcolithic period and the earliest occurrences of the Early Bronze Age. Its aim was: a) to proceed to new, more accurate ¹⁴C dates, from samples (preferably short-living) freshly collected in secure archaeological contexts, in order to complete and renew the available evidence, and b) to test possible explanatory patterns, according to the geographical situation, nature and type of the dated sites (lowlands/uplands, settlements/cemeteries, tells/flat sites/caves, long-living/short-living, etc.). Thirty-four archaeological sites have been selected to represent the different profiles, all recently excavated or with ongoing fieldwork at the time of the project (Fig. 4). The program also included a palaeo-environmental axis, whose aim was to investigate the environmental conditions before, during and after the presumed 4th millennium gap in a number of selected areas, in order to test its possible connection with climate changes, but also with taphonomy (erosion, alluviation, etc.).

The methods and results of this research, which involved in total more than forty persons, have been presented in detail elsewhere.²² Here, we only briefly discuss some of the most interesting outcomes and attempt to interpret the historical consequences. Naturally, we take into consideration the previously existent dates, recalibrated at 2σ with the latest calibration curves (IntCal09).

Circumscribing the Neolithic/Chalcolithic – Early Bronze Age Gap

The results of the c. 200 new high-precision radiocarbon dates produced by the ‘Balkans 4000’ program²³ confirm the existence of a substantial break in occupation in both countries towards the end of the 5th millennium BC, or little after that. At the present state of the record, there is no 5th millennium site that extends uninterruptedly to the late 4th millennium. This concerns ‘young’ sites that had only been founded two or three centuries ago, as well as long-established settlements, which might have already experienced other hiatuses in their occupation (Figs. 5–6). It is important to note that the break concerns not only settlements, but cemeteries as well (e.g. Smyadovo, in northeast Bulgaria),²⁴ and also sites that lay in different natural environments, as well as sites with different profiles. It may appear, in fact, as if this hiatus is best documented at tells, however other types of sites, such as flat settlements or caves (e.g. Kryoneri and Sidirokastro, both in the Struma Valley in Greek eastern Macedonia)²⁵ were equally affected.

The majority of the abandonment events seem to take place in the third quarter of the 5th millennium, i.e. between 4400 and 4200 calBC. ¹⁴C dates from the last destruction layers in most sites fall indeed within this interval.²⁶ However, other possibilities exist: the heterogeneity of the gap’s upper limits, i.e. the date of the sites’ abandonment, and the random character of their distribution at a regional scale, is indeed the second point to underline. In Thessaly for instance (Fig. 7), some sites seem to stop being occupied before 4500 calBC (e.g. Vassilis),²⁷

²² Tsirtsoni forthcoming a. Part of the archaeological results are also briefly discussed in Maniatis et al. 2014; Tsirtsoni forthcoming b. The results of the palaeo-environmental research are presented in Lespez et al. 2014; Lespez et al. forthcoming.

²³ Standard deviation between 30 and 50 years BP, giving after calibration at 2 sigmas (95%) intervals of approximately 150–250 calendar years.

²⁴ See Chohadziev – Venelinova 2006; Chohadziev – Venelinova 2007; Chohadziev, in Tsirtsoni forthcoming a.

²⁵ Regarding Kryoneri, see Malamidou 2007; Malamidou, in Tsirtsoni forthcoming a. In respect to Sidirokastro, see Poulaki-Pantermali et al. 2004; Siros et al. 2007; Siros – Miteletsis, in Tsirtsoni forthcoming a. The sequences of both sites are also discussed in Maniatis et al. 2014.

²⁶ See also Tsirtsoni forthcoming b.

²⁷ A flat settlement, recently excavated by the Ephorate of Larisa; see Toufexis et al. 2009. The slight possibility to also have deposits that post-date the main LNII occupation layer was rejected by the ¹⁴C dates.

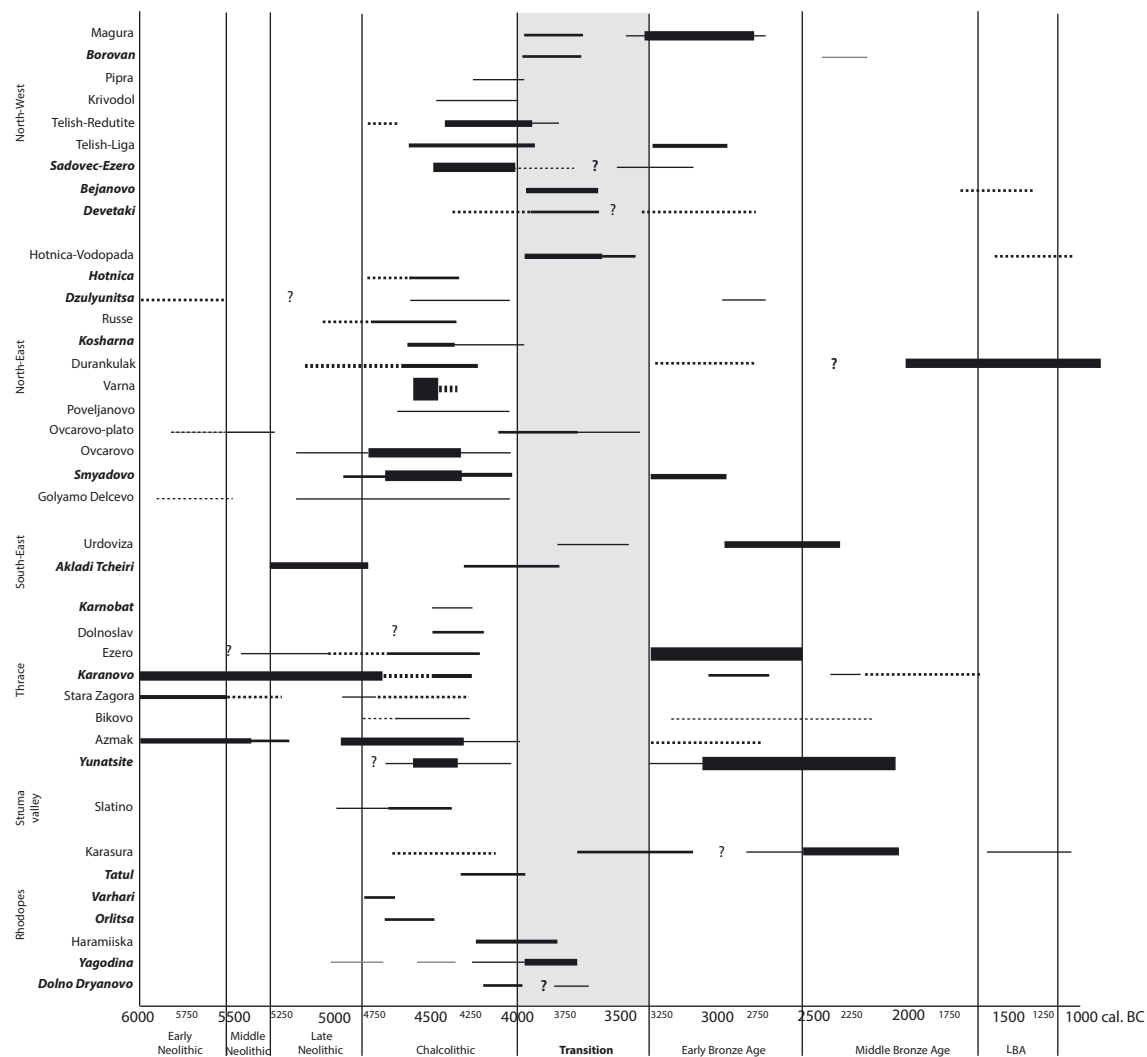


Fig. 5 Graphic showing the duration of occupation in Neolithic/Chalcolithic sites with ¹⁴C dates from Bulgaria; sites dated in the frame of the ‘Balkans 4000’ program are shown in bold italics. Solid lines correspond to the parts dated by ¹⁴C (thickness of lines proportional to the number of dates), dotted lines to the parts attested only archaeologically. No statistical treatment is applied.

others around 4400–4300 calBC (Pefkacia,²⁸ Rachmani²⁹), and others continue until 4000 or 3800 calBC (Prodrornos,³⁰ Palioskala,³¹ Galini³²). Flat settlements and tells are found together in almost all groups.

²⁸ Recalibration of the dates given by Weisshaar 1989, 139.
²⁹ A sample taken from the fill of one of the Final Neolithic wells, excavated by G. Toufexis in the late 1990s; see Toufexis et al. 2000; Toufexis 2008, 571–572.
³⁰ Not to be confounded with the Early Neolithic Prodrornos excavated by G. Hourmouziadis in the early 1970s, from which it is distant by c. 2km. The site discussed here, called also ‘Magoula Aghios Ioannis’, has been investigated by the Ephorate of Karditsa between 2007–2008 as a rescue operation. See Karagiannopoulos, in Tsirtsoni forthcoming a.
³¹ This important Late and Final Neolithic settlement was investigated in the late 1990s during the works for the partial reconstruction of the former lake Karla in the eastern Thessalian Plain. See Toufexis 2003; Toufexis, in Tsirtsoni forthcoming a. Additional excavations are currently underway.
³² Toufexis 1999; Toufexis 2008, 569–570.

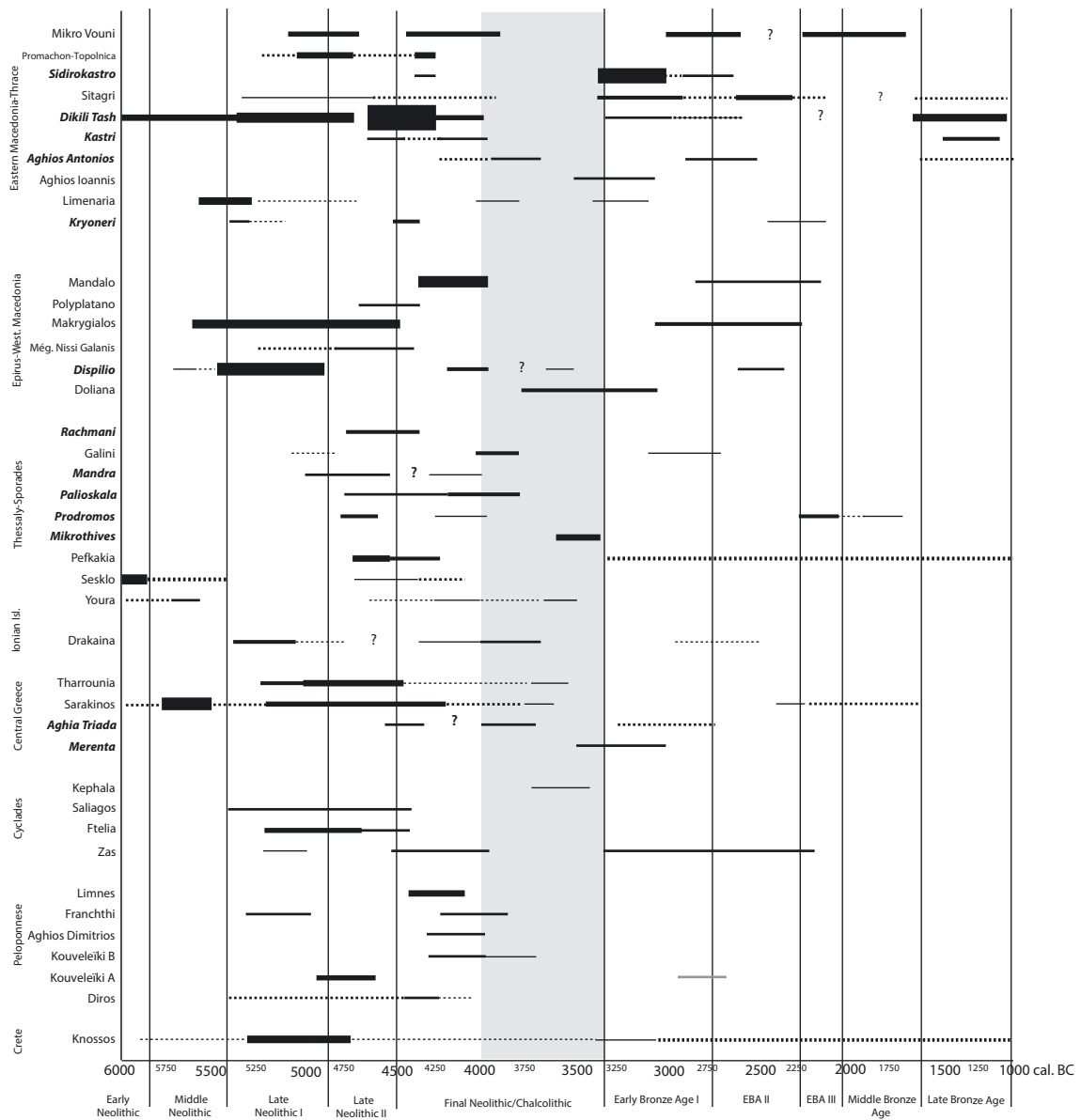


Fig. 6 Graphic showing the duration of occupation in Neolithic/Chalcolithic sites with ¹⁴C dates from Greece; sites dated in the frame of the ‘Balkans 4000’ program are shown in bold italics. Solid lines correspond to the parts dated by ¹⁴C (thickness of lines proportional to the number of dates), dotted lines to the parts attested only archaeologically. No statistical treatment is applied.

We get a similar picture at approximately the same time in most other regions. In northwestern Bulgaria, for example, some sites are abandoned, or change use as early as 4300 calBC (e.g. *Lîga*³³), others seem to continue until 4000 or 3900 (e.g., *Sadovec-Ezero*,³⁴ *Teliš-Redutite*³⁵),

³³ Merkyte et al. 2005, 34–35.

³⁴ This multi-layered settlement was first investigated during a salvage expedition, which also produced a few ¹⁴C dates: Merkyte 2007, 21–22. The samples dated in the frame of ‘Balkans 4000’ come from subsequent systematic excavations: Gergov 2007; Gergov 2008; Tsirtsoni forthcoming a.

³⁵ Gergov 1992; Görsdorf – Bojadžiev 1996, 152.

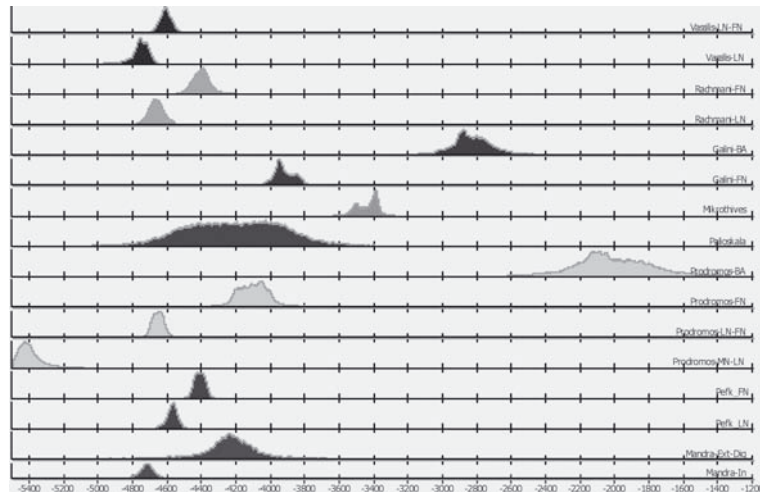


Fig. 7 Diagram showing the distribution of ^{14}C dates from Neolithic/Chalcolithic sites in Thessaly; data are statistically processed with the program *RenDateModel* (© CNRS-Iramat).

whereas others reach 3800 or 3700 calBC (Bejanovo,³⁶ Borovan³⁷). This means that a number of chronological ‘thresholds’ exist,³⁸ whose distribution is, however, random at a supra-regional scale. In other words, there is no clear pattern that would suggest any kind of geographical progression of the abandonment, for instance from the north to the south, or from the coasts to the interior. It is true that more sites end at c. 4300 calBC in northeastern than in northwestern Bulgaria, and that, conversely, more sites enter the 4th millennium in the northwest than in the northeast, but the two kinds of evidence, as well as a number of intermediary patterns are found in both regions.

As a result, no region seems to be completely vacant. The only exception is Bulgarian Thrace, which, in the present state of our knowledge, has no sites dating after 4200 calBC. But this could be a problem of taphonomy and archaeological visibility rather than a true emptying of the region.³⁹

Evidence from other regions indicate that occupation continued in some settlements for at least one or two more centuries, but due to the erosion and/or the later constructions the traces of this late occupation are poorly preserved in the main sequence (i.e. in the part where most ^{14}C samples come from). This is especially true for tells. Traces can be detected in the site’s periphery, where

³⁶ Valentinova – Gushterakliev 2008; Valentinova, in Tsirtsoni forthcoming a.

³⁷ A flat site near Vratsa, investigated from 2008–2009; see Ganetsovski 2008; Ganetsovski 2009; Ganetsovski, in Tsirtsoni forthcoming a.

³⁸ It is possible that some of these ‘thresholds’ result from an artificial concentration of dates, due to the specificities of the calibration curve. This does not mean that an event dated in the 4200/4000 calBC interval, for instance, could actually have occurred at 4500 BC (although, statistically, this is not totally impossible). It rather means that we are not (yet) able to go beyond a certain degree of precision (4200, 4100, or 4000?), which is greater or lesser according to the parts of the curve. For the period under consideration, the two best-known ‘plateaux’ occur at around 5200 BP (= 4000–3800 calBC), and around 4500 BP (= 3300–3000 calBC). For a discussion, see Boyadziev 1995, 153–155; Bojadziev 1998, 354–355; Johnson 1999, 330–332; Maniatis – Papadopoulos 2011, 30–34.

³⁹ The question of visibility in the Thracian Plain, whose lower parts are constituted mainly by heavy marshy soils (locally called *smolnitzas*) was already evoked in Dennell – Wembley 1975; they concluded (p. 101) that ‘some minor Neolithic sites may have been buried by subsequent [EBA] *smolnitza* formations’, adding however that marshy areas probably would not have been favourable for prehistoric (i.e. Neolithic) settlement. The latter part of their proposition is not proven though. See Gaydarska 2007, 43–50 for further information. The same authors admit that there may have existed “other living sites, relating to summer grazing on the *Sredna Gora* [mountains] and on the *smolnitzas*, which were too ephemeral to leave evidence in the archaeological record”. Similar considerations have been expressed about the visibility of FN sites in Thessaly: Johnson – Perlès 2004. Also see discussion, *infra*.

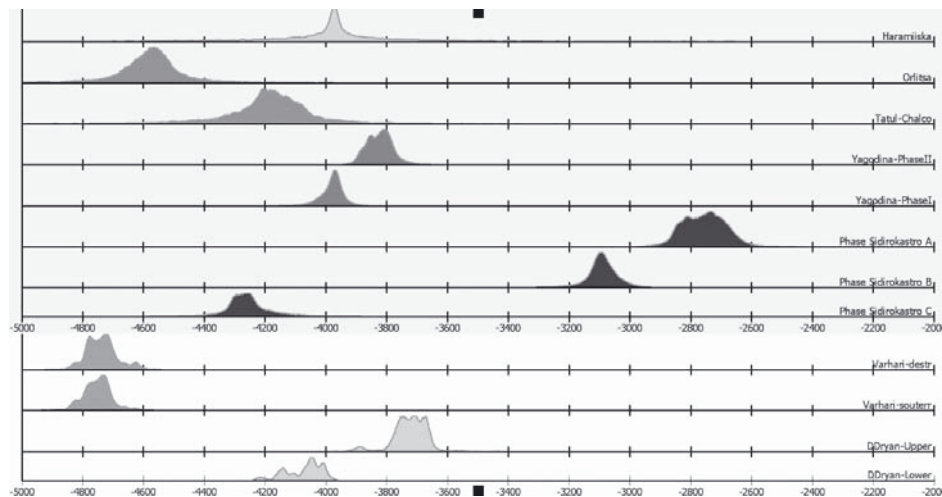


Fig. 8 Diagram showing the distribution of ¹⁴C dates from Neolithic/Chalcolithic sites in the Rhodopes; data are statistically processed with the program RenDateModel (© CNRS-Iramat).

the later levels are preserved as colluvial deposits in a secondary position: we have one certain example of this situation at the tell settlement of Dikili Tash (Greek eastern Macedonia),⁴⁰ and possibly a second one, at Mandra in Thessaly.⁴¹ Perhaps some of the Thracian tells have undergone a similar evolution.

Conversely, some of the hypotheses concerning the prolongation of habitation in specific regions or landscapes may be a consequence of the better preservation. A good example is found in the Rhodopes on the Greek-Bulgarian border, an area where the Chalcolithic is traditionally acknowledged to survive longer. The dominant scenario is that the area was first settled at the end of the 5th millennium BC, as the result of a movement of populations from the abandoned lowland tells. Both these statements (i.e. the late start and the prolongation after the end of tell settlements, until 3800 or even 3600 cal BC) are used as arguments to support the ‘catastrophe’ scenario in the Balkans, by natural causes or invasions.⁴²

The new ¹⁴C dates show that settlement in the area commences well before the end of the tells in the neighbouring Thracian plain; therefore, it is not the work of refugees (Fig. 8). The two settlement patterns, therefore, coexist from the early stages of the Chalcolithic period. One should note that the two sites that represent this early group (Varhari and Orlița)⁴³ are totally flat and are located in small river valleys in the mountains. They probably would not have been discovered if modern road-construction in the region had not been undertaken. This bespeaks the reliability of our corpus and brings to the fore the discussion about archaeological visibility. As for the second point, i.e. the prolongation of the Rhodopes sites beyond the end of the activity on tells, it appears to be only half-true. Several sites, such as the caves of Yagodina and Haramiiska already dated in previous years,⁴⁴ or the more recently excavated open-air site of Dolno Dryanovo,⁴⁵ survive until

⁴⁰ Darcque et al. 2014; Darcque et al. forthcoming. In fact, a more thorough analysis of the evidence suggests that traces of these later occupation events could also be found in the main body of the tell; see chapter on Dikili Tash, in Tsirtsoni forthcoming a. This reconstruction has been confirmed by the finds of the 2013 excavation at the site site; see <<http://www.chronique.efa.gr/index.php/fiches/voir/4078>> (last accessed 24.10.2014).

⁴¹ According to a ¹⁴C date from the fill of one of the ditches that surrounded the Late Neolithic settlement. A group of graves (not dated) were placed in this fill, and subsequently covered by later colluvia; see Toufexis et al. 2006.

⁴² Todorova 1995, 90; Bojadžiev 1998, 358–359.

⁴³ See the respective papers by J. and K. Boyadzhiev, in Tsirtsoni forthcoming a.

⁴⁴ Görsdorf – Bojadžiev 1996, 154. Only Yagodina has been subjected to further dating by the ‘Balkans 4000’ project, which confirm and refine the older ones: Todorova – Avramova, in Tsirtsoni forthcoming a.

⁴⁵ Todorova, in Tsirtsoni forthcoming a.

Date BC	Periodisation (dominant Aegean terminology)	Periodisation (alternative Aegean terminology)	Crete, Cyclades Peloponnese	Thessaly	Macedonia, Aegean Thrace
5500	LATE NEOLITHIC I	LN IA	Knossos V–VI Franchthi 3–4	<i>Tsangli -Larissa</i>	Dikili Tash I-early Sitagri I Makri II, Paradimi I–III Dispilio, Makryghialos I, Sitagri II Dikili Tash I-late
5300			Tharrounia Ia Ftelia Saliagos I	<i>Arapi</i>	
4900	LATE NEOLITHIC II	LN IB	Knossos IV Saliagos II Tharrounia Ib Aghia Triada LNI	<i>Otzaki</i> <i>Dimini classique</i> Pefkakia LN Mandra, Vassilis, Palioskala, Rachmani, Prodromos	Paradimi IV Makryghialos II Dispilio, Sitagri IIIA Dikili Tash II-early Kastri LN II
4500	FINAL NEOLITHIC OR CHALCOLITHIC	LN IIA	Alépotrypa Knossos II–III Franchthi 5 Tharrounia II Aghia Triada LNII	Pefkakia FN Palioskala, Rachmani ↑	Kryoneri Dikili Tash II-late Sitagri IIIB–C ↓
4200				Mandra Palioskala Prodromos	Dispilio Dikili Tash II-final Sidirokastro Kastri
4000		LN IIB	Aghia Triada FN Kephala Tharrounia IIB	Palioskala	Kastri FN Aghios Antonios
3700					
3500				Mikrothives	
3300				Merenta Trans.	Aghios Ioannis
3200	EARLY BRONZE AGE I ↓	EBA I	Eutresis III–IV <i>Grotta -Pelos</i> Merenta EBAI	Pefkakia 1–2	Sitagri IV Dikili Tash IIIA Sidirokastro B
2800	EARLY BRONZE AGE II	EBA II	Eutresis VI–VIII <i>Kampos -Syros</i> Merenta EBAII	Pefkakia 3	Sitagri Va Dikili Tash IIIB Sidirokastro A

Fig. 9 Proposed periodisation of the Bulgarian and Greek Neolithic/Chalcolithic and Early Bronze Age, in standard fonts, ‘cultures’ are in italics; in bold are the sites dated by

Periodisation (Balkan terminology)	Rhodopes Struma valley	Thrace	North-East Bulgaria	North-West Bulgaria	South-East Bulgaria
MIDDLE NEOLITHIC	Balgarčevo II Damjanitsa I–II	Karanovo III	<i>Usoe</i>		
LATE NEOLITHIC	Balgarčevo III Damjanitsa III Promachon- Topolnica	Karanovo IV	<i>Hamangia I–II</i>	<i>Kurilo</i>	Akladi Tseiri I
EARLY CHALCOLITHIC	Varhari Slatino	<i>Marica I–IV</i>	<i>Hamangia III</i>	<i>Gradešnica</i>	Akladi Tseiri II
MIDDLE CHALCOLITHIC	Orlitsa	Karanovo V	<i>Hamangia IV</i> Smyadovo		
LATE CHALCOLITHIC		Karanovo VI, Yunatsite I Karnobat	Varna <i>Gumelnița</i> Kosharna Smyadovo Hotnica	<i>Krivodol-Sălcuța</i>	
TRANSITION (FINAL CHALCOLITHIC)	Kolarovo Tatul Yagodina I D. Dryanovo		Dzulyunitsa (graves)	Liga, Telish-Redutite Sadovec	Akladi Tseiri III Sozopol
	Yagodina II D. Dryanovo		Cernavoda I Pevec Hotnica-Vodopada	↑ <i>Sălcuța IV</i> Galatin Bejanovo Devetaki, Borovan	Akladi Tseiri (graves)
PROTO-BRONZE ↓		Drama- Merdžumekja		Sadovec (graves)	
				Liga (graves)	
EARLY BRONZE AGE		Ezero A Yunatsite IIA Karanovo VII	'Pit graves' Smyadovo	Magura	
	Kovačevo Tatul	Ezero B Yunatsite IIB	Ezerovo	Coțofeni	

integrating the results of the 'Balkans 4000' program and other recent evidence. Individual sites are the program. The arrows indicate the most significant adjustments introduced.

after 4000 BC, but others, like *Tatul*,⁴⁶ do not survive that long. On the other hand, some tell sites in the neighbouring plains, like *Dikili Tash* for instance, may also endure as long.⁴⁷

Getting back to our ‘thresholds’ and their correlation, or not, with some of the broadly acknowledged chrono-cultural stages, I would like to briefly discuss the case of Thessaly (Fig. 9). It is time we accept that the ‘Rachmani Culture’ is not a long-lasting phenomenon spanning the whole LN-EBA transition, as it is usually presented in the Greek archaeological literature;⁴⁸ neither is it a phenomenon taking place at the end phases of this transition after a hiatus, as it is sometimes argued in the Bulgarian literature.⁴⁹ It is a local version of the mature Greek Neolithic – parallel to the Bulgarian Late Chalcolithic – which succeeds directly to the so-called ‘Dimini Culture’, and ends, like its Bulgarian counterpart, well before the end of the 5th millennium BC. M. Johnson had already claimed this several years ago, based, among other elements, on the ¹⁴C dates from *Pefkakia*.⁵⁰ The addition of dates from more sites, including *Rachmani* itself, now confirms this claim. Occupation continues in Thessaly, and there are sites that remain inhabited until 3900 or 3800 calBC, but we should stop referring to them as ‘Rachmani’, unless we agree to minimise completely the chronological dimension of this term. Similarly we should stop referring to the post 3800 calBC phenomena in southern Greece as ‘Attica-Kephala’. Very interesting things are certainly happening both in Attica and the Cyclades in the second and third quarter of the 4th millennium, but it becomes confusing when addressing them by the same name applied to developments of the late 5th and early 4th millennium.⁵¹

At the other end of the gap, i.e. the date of the settling (or resettling) of the EBA sites, the results from ‘Balkans 4000’ are less revolutionary. Indeed, no EBA level at any of the investigated sites has provided dates prior to 3300–3100 BC. The only exception comes from the site of *Merenta* in Attica, a rather atypical settlement with subterranean rock chambers, whose beginnings seem to go back to c. 3400–3350 calBC, and which continues to the ‘normal’ EBA I/II, with dates after 3000 BC.⁵² However, the unique properly speaking ‘transitional’ settlement is *Mikrothives* in Thessaly, which provided several dates to approximately 3600–3500 calBC. Unlike *Merenta*, it does not continue into the EBA; therefore, it stands as a true ‘missing link’ between the two major periods, both by its chronological position and its material characteristics.⁵³

This brings us back to what seems to be the most important point of our analysis: the regional continuities. As has been stated, taken individually all the Neolithic/Chalcolithic sites seem to be abandoned at some point in their history, and most of them display gaps that reach or exceed an entire millennium. However, when considered at a regional scale, gaps are significantly smaller, as the individual sequences largely complete each other in most areas, indicating that settlements are simply changing location. This is particularly evident in the case of the *Rhodopes* (supra), especially when the data on both sides of the modern frontier are considered. Indeed, if we only included data from Bulgaria we would get the impression that activity ends around 3700/3600 BC and does not start again before c. 2500 BC (i.e. in the advanced EBA), when we have the first available dates from *Tatul*.⁵⁴ If we add however evidence from *Sidirokastro*, on the Greek side of the frontier,⁵⁵ we obtain a regional sequence that stretches from the Early Chalcolithic (= Greek

⁴⁶ Ovcharov et al. 2008; Leshtakov et al., in Tsirtsoni forthcoming a.

⁴⁷ Supra, footnote 40.

⁴⁸ Supra, footnote 14.

⁴⁹ Supra, footnote 21.

⁵⁰ Johnson 1999.

⁵¹ E. Alram-Stern had already convincingly argued in favour of this position on the basis of pottery analogies: Alram-Stern 2007.

⁵² Kakavogianni et al. 2009; Kakavogianni et al., in Tsirtsoni forthcoming a.

⁵³ Adrymi-Sismani 2007. The one-layered settlement at *Aghios Ioannis* on *Thasos*, also labelled *Transitional*, seems to synchronise better with the earliest phase at *Merenta*: see Maniatis – Papadopoulos 2011; Maniatis et al. 2014.

⁵⁴ Leshtakov – Tsirtsoni, forthcoming.

⁵⁵ Supra, footnote 25.

Late Neolithic II) to the end of the Early Bronze Age, and beyond,⁵⁶ with ‘only’ a 300–400 years gap, between roughly 3600 and 3300 BC. With new finds, this gap could possibly decrease even more. Similar examples are also found in other regions, like the island of Thasos, Attica, and Thessaly. When considered individually, a site like Prodromos displays a two millennia gap, but if we take Thessaly as a whole, there are no more than 200–300 years separating the last pre-Bronze Age occupation from the first ¹⁴C-dated EBA event.

Formation or Transformation?

With respect to the initial question, whether there exists, or not, a relationship between the late 5th and late 4th millennium BC phenomena in the Aegean and the Balkans, the following statements can be made:

1. According to evidence from settlements, the transition from the former to the latter would be a transformation process rather than a new start after a generalised break. There seems to be continuity in occupation at the broad regional level, but with several local gaps, which obviously result from changes in the mode of land use: a greater mobility in the settlements themselves, but also in the choice of places for the dead, the exploitation of raw materials, etc. In addition to short-distance intra-regional movements (e.g. people moving from Rachmani to Palioskala, and from there to Mikrothives, etc.) one might expect to find some more distant movements, which would explain the redistribution of the population at a supra-regional level, especially the transfer from the north, where we have a greater density of sites in the Neolithic/Chalcolithic period, to the south, where we have a greater density of sites in the EBA.⁵⁷ Such redistribution does not necessarily imply a massive migration; it could proceed by small or medium-scale movements of some portions of the original groups. This point will be developed below.

The continuity is further supported by similarities in the material culture of the two periods, which can only be explained if one recognizes that the original creative forces (i.e. the populations living and working in the Aegean and the Balkans during the Neolithic/Chalcolithic period) continued to develop and exchange with each other during the following centuries, even if we actually lose sight of them.⁵⁸ The presence at the Transitional-period settlement of Mikrothives of *Spondylus* bracelets and ceramic conical cups that call to mind the marble cups of Varna or Kephala (older by c. 900 and 300 years respectively),⁵⁹ alludes to the persistency of some technological traditions and aesthetic preferences over the ages, as well as to the maintenance of networks connecting people together. The late 4th millennium specimens should not be considered as parallels of those of the 5th millennium; they are rather their ‘descendants’, i.e. a recomposed (simplified, transposed or enriched) version of the original products. External elements are of course present in the EBA material culture as well, and witness the progressive opening of the local societies to neighbouring ‘cultures’.⁶⁰

⁵⁶ Tatul is also occupied in the 2nd millennium (Middle Bronze Age): Leshtakov – Tsirtsoni, forthcoming.

⁵⁷ This difference in distribution should be considered, however, with a lot of scepticism for it might reflect problems in preservation and taphonomy (compare supra, footnote 39), as well as research biases. In areas to the north where the remains of the two periods have undergone the same kind and the same degree of investigation, the overall density of settlements is to be comparable: Lespez 2008, 297–300, 396. The contrary is observed in southern Greece (e.g. Laconia, Argolid): see Mee 2011, 10, with further references.

⁵⁸ Compare also Merkyte 2007, 47.

⁵⁹ Adrymi-Sismani 2007, 76, and pl. XII: n. For the ‘Final Neolithic’ marble conical cups, see also infra, footnote 77. The date retained here for the Varna cemetery is the one provided by Higham et al. 2007, but it is possible that not all tombs are contemporaneous and that there also exists a slightly later period of use of the cemetery (Higham et al. 652; and V. Slavchev, oral communication). We do not know if the grave that contained the marble rhyton (Grave 41) belongs to the earlier or the later group. The date provided for Kephala is from Coleman 1977, 100, who considered it too low; also see Coleman 2000, 124.

⁶⁰ The progressive character of the introduction of such external elements is now demonstrated; for example, see the discussion about the ‘shell-tempered ware’ in Manzura 1999, 97–103 (summarised also by Ivanova 2008).

2. The transformation process does not start at the end of the Late Neolithic-Chalcolithic period, i.e. the last centuries of the 5th millennium BC or the early 4th, but already during its heyday. ‘Alternative’ ways of living, such as settlements in mountains, caves, flat settlements in relatively remote landscapes, or small coastal sites, coexist indeed in all areas with the ‘mainstream’ ones (tells or big flat sites in plains and river valleys) since the beginning of the period (ca. 4800 BC),⁶¹ sometimes even before, since the Late Neolithic I (ca. 5200 BC).⁶² Again, Rhodopes and the adjacent plains (Thrace to the north, Drama to the south) with its variety of sites can be taken as exemplary. The different types of sites probably functioned together and constituted elements of an entire socio-economic system; tells or large flat sites are not the only but just the most conspicuous part of this system.

3. For reasons that are still not well understood, this conspicuous part of the system falls apart towards the end of the 5th millennium BC. Two issues, however, should be noted. First, whatever the reasons, this is not an abrupt event but a rather slow process, although not patterned in any particular way as discussed above.⁶³ Second, the breakdown of one of the system’s branches might better be explained by social and economic factors, although some environmental changes are possible, especially in landscapes that were particularly sensitive to such changes, for instance sea and lake shores.⁶⁴ Changes in temperature or precipitation could indeed weaken such ecosystems. They do not explain, *stricto sensu*, the sites’ abandonment but might have disturbed some of the economic and social relationships that maintained the system. On the contrary, it is very unlikely that the abandonment would be a consequence of an overexploitation of land potential around long-living settlements.⁶⁵ The first significant effects of erosion in continental plains are registered in fact, at the end of the EBA, or later.⁶⁶

Perhaps at some point people did not need, or were not able to afford anymore this ‘conspicuous’ lifeway: high tells with the accumulation of products, rich cemeteries, complex production and exchange systems, etc. However, this disengagement does not come as an abrupt decision but as the result of a series of small progressive changes.⁶⁷

Thus, it appears that there is, already during the Late Neolithic II/Chalcolithic, a progressive ‘transfer of attention’ towards other types of artefacts, or types of expression. This transfer produces, unavoidably, a certain decline in some crafts – usually the same that were most visible in the previous periods.⁶⁸ The decline of painted pottery is observed in southern Greece before

⁶¹ For instance, Varhari and Orlitsa in the Rhodopes.

⁶² For instance, Ftelia and Saliagos in the Cyclades, Tharrounia in Euboea, Akladi Tseiri on the Black Sea coast. Other sites, especially, caves, are inhabited even earlier (beginning of Neolithic or before), but not all regions are represented, neither have we evidence that they were occupied continuously in the later stages of the Neolithic. Mee (2011, 10) describes the trends in settlement at the Neolithic-EBA transition by the term of ‘gradual shift’.

⁶³ Compare Ivanova 2008, 177–179.

⁶⁴ There is some evidence from palynological studies around the Bulgarian Black Sea coast indicating changes in the exploitation of the natural environment (proportion of arboreal-non arboreal plants, presence of anthropogenic indicators, etc.) at the transition from the Chalcolithic to the EBA period: Filipova-Marinova – Bozilova 2003. These changes seem to be connected with a transgression of the Black Sea level during the same dates (‘Fedorov’s transgression’); see Shilik 1997; Govedarica 2003. However, no direct impact of this transgression is seen further inland. Similarly, the research conducted in the lower Struma Valley in the frame of the ‘Balkans 4000’ project showed that part of a settlement located very close to the shore of the former lake of Achinos was submerged at the end of the 4th millennium BC (after 3600 BC). This event indicates greater hydrological activity of the watercourses that alimeted the lake, but (i) the possible connection with broader climatic changes is far from evident, (ii) no water rise is recorded at only a few meters from this spot, meaning that the impact of such events is local and would not have produced the abandonment of the whole area around it: see Lespez et al. 2014; Lespez et al. forthcoming.

⁶⁵ Anthony 2010, 51.

⁶⁶ Dennell – Webley 1975, 108. These erosive events are seen as the result of extensive clearings, for arable land, in the surrounding hills. See also Lespez 2008, 235–239, 380.

⁶⁷ A similar idea is expressed in Bailey 2000, 260–261.

⁶⁸ Papadopoulos 2002, 280; Papadopoulos 2007, 323–324.

the mid-5th millennium BC.⁶⁹ In the same years, the areas further north (Thessaly, Greek Eastern Macedonia, Bulgaria) witness an ‘explosion’ of high-skilled painted wares, some of which are the products of specialised workshops and are exported in relatively great distances (‘Classic Dimini’ Pottery, eastern Macedonian Black-on-Red).⁷⁰ They coexist with other pottery productions (graphite painted, incised, with or without addition of a paint after firing), which, although sometimes fancier in appearance, are technically simpler and progressively replace the more demanding fine painted wares of the previous period.⁷¹ In other words, the decline of the pottery in the 4th millennium started during the ‘climax’ stages of the 5th millennium.⁷²

4. The change in settlement patterns has been interpreted by many authors as a turn towards pastoralism and animal husbandry, in contrast to the previous model, which was more focused on land cultivation. This idea, which is of course connected with A. Sherratt’s hypothesis about the ‘secondary products revolution’, is definitely a valuable one although not entirely satisfactory. The main objection comes from the fact that this ‘new’ exploitation model is not so new, since it starts at least at the beginning of the 5th millennium and coexists with the lowland farming sites. More importantly, many of the caves or mountainous settlements are abandoned at exactly the same time as some of their neighbouring tells, possibly as the result of similar decisions.

As the late C. Mee recently put it, “[a greater reliance on pastoralism] does not explain why the pattern of settlement changed, only how it would have been possible”; he added: ‘There was evidently an element of choice and one that may have made communities more interdependent’.⁷³

Factors of Change

In fact, there must have been more than one element of choice. Given the overall duration of the transformation and its multidirectional character, we should assume that several factors were involved.

One of them is perhaps connected with the exploitation of raw materials, or the transformation and distribution networks. I suggest that the abandonment of many Late Neolithic/Chalcolithic settlements, could actually be an effort to get progressively closer to something, for instance to a more accessible or easier to exploit raw material source, or one that is better connected with skilful craftsmen, rather than an effort to move rapidly away from something (rise of water level, foreign invaders, etc.). Two examples illustrate this hypothesis.

The first concerns stone-, and more specifically, marble-working. It is known that much of the marble objects found in northern Greek settlements in the late 6th – early 5th millennia (LN I Dispilio, Limenaria) are made from marble coming from the Cyclades.⁷⁴ At a first glance, such an import seems surprising, especially on an island like Thasos, which has very good quality marble

⁶⁹ We mean here by ‘decline’ both the decrease, in quantity, of painted wares and the drop in technical skill or sophistication, compared to the more high-skilled productions of the previous MN and LNI periods. Which is actually, as I have stated elsewhere (Tsirtsoni 2010), one of the reasons why the cultural changes that take place at the end of the Neolithic are less visible in southern than in northern Greece.

⁷⁰ The brown-on-cream ‘classic Dimini’ painted pottery travels as far as Greek western Macedonia and Albania: Kotsakis 2010. The Black-on-Red from Greek eastern Macedonia is exported along the entire Struma Valley and down to Thessaly: Malamidou et al. 2006; Tsirtsoni et al. 2007.

⁷¹ Recent evidence from Dikili Tash indicates, however, that Black-on-Red Pottery is produced with the same standards until at least the last quarter of the 5th millennium (4300–4200 cal BC): see <<http://chronique.efa.gr/index.php/fiches/voir/3406/>> (last access 25.7.2014); Darcque et al. forthcoming b.

⁷² The idea of a gradual decline of pottery in northern Greece as well is also found in Demoule – Perlès 1993, 401.

⁷³ Mee 2011, 10.

⁷⁴ Yfantidis 2008, 81; Maniatis et al. 2012. The possibility is still under investigation at other settlements like Dikili Tash or Promachon-Topolnitsa, where fine marble objects (vases, beads) are found in both LNI and LNII/Chalcolithic contexts. For Dikili Tash: see Darcque – Tsirtsoni 2010, 60 fig. 9. For Promachon: Koukouli-Chryssanthaki et al. 2007, 73 fig. 53.

sources and in antiquity was itself a major exportation centre.⁷⁵ One has to admit that either the Neolithic inhabitants had not yet discovered these sources, or, more likely, they did not have the know-how to work them. The number of objects increases over time, both in these areas and further north (e.g. in northeast Bulgaria);⁷⁶ and although their provenance has not been determined by analysis, most scholars feel comfortable with the idea that they may derive from the south, as part of the long-distance exchanges taking place in the well-established socio-economic system of the Aegean-Balkan *'koini'*.⁷⁷

We could presume that at some time towards the end of the 5th or the beginning of the 4th millennium BC, the inhabitants of such a site, for instance Limenaria, would have decided to move closer to the source, in order to acquire the skill or gain greater benefit from this exchange system.⁷⁸ Perhaps, it was only part of the village's inhabitants that moved, whereas others (those that were not interested in this type of craft-working or exchange) stayed on the island. The latter could have eventually joined their neighbours at Kastri (an already existent settlement in the nearby mountains)⁷⁹ and continued to live in their mixed economic system, whereas the former (the 'migrants') would have participated in the further consolidation of exchange networks between the two sides of the central Aegean. This is of course only one among several scenarios, but it might have been one of the components of the progressive shift from the northern to the southern Aegean, and the replacement of the very long-distance exchanges of the 6th–5th millennia by the mid-distance exchanges of the 4th millennium.

The second example concerns metals. This would not be the first time that the transfer of metallurgical activity correlates with the depopulation (true or apparent) of a particular region in the Balkans. Indeed, it seems that the abandonment of several sites of the Late Neolithic Vinča 'Culture' in Serbia, including Vinča itself, is associated with the cessation of the pioneering metallurgical centre of Rudna Glava. According to the recent ¹⁴C dates, this event took place as early as 4600 cal BC⁸⁰ and could be one of the explanations for the particular growth of the Bulgarian Chalcolithic sites in the following centuries, when the activity moved to the copper mines in the present Bulgarian territory (Aibunar, Medni Rid, etc.).⁸¹ A shift in the opposite direction (towards the area of the Bodrogkeresztúr Culture) is believed to have occurred at the end of the 5th millennium.⁸² However, other movements might have existed as well.

In Greece, the first metal objects also appear in Late Neolithic I (i.e. before 5000 BC), but the first evidence of local metalworking date to the Late Neolithic II.⁸³ Firm evidence concerning the

⁷⁵ Koukouli-Chryssanthaki et al. 1999.

⁷⁶ Vases at Varna (Le premier or de l'humanité, 134: cat. Nr. 275; 138–139: cat. Nr. 291–293), marble bracelets at Durankulak (Avramova 2002, 198). Also, marble figurine and 'button' in Hotnica (Chochazdiev – Chochazdiev 2006, 65 figs. 3.2, 6.); the latter with exact parallels at Dikili Tash.

⁷⁷ Chapman 2013, 324, postulates that the marble conical rhyton found at Varna, as well as other objects in the same area, are of Aegean origin, although not necessarily Cycladic: he considers more probable a manufacture in western Anatolia, based on the evidence from the workshop at Kulaksizlar (Takaoğlu 2005; Takaoğlu 2011). The existence of such a workshop definitely strengthens the hypothesis of a 5th millennium network of marble-working on both sides of the Aegean; it does not speak, however, against the existence of similar workshops in the islands, whether in the Cyclades or the Dodecanese, given that both those areas display, in addition to raw materials, several sites with complete or fragmentary specimens: Kea-Kephala (Coleman 1977, 106, pl. 23); Samos-Tigani (Felsch 1988, 221–222, pl. 75); Strofilas (Televantou 2009, 136).

⁷⁸ In the precise case of Limenaria, the time of abandonment would most probably lay in the years around 3900/3800 BC: see Maniatis – Fakorellis 2012, 287, tab. 1. However, the site's sequence displays also an important hiatus in the course of the 5th millennium; consequently, it is not impossible that the transfer process had started earlier.

⁷⁹ The coexistence of the two settlements has been confirmed by ¹⁴C dates produced in the frame of the 'Balkans 4000' project; see Koukouli – Papadopoulos, in Tsirtsoni forthcoming a.

⁸⁰ Borić 2009.

⁸¹ Which were, however, already active in the Late Neolithic.

⁸² Pernicka et al. 1997, 131–133; Pernicka – Anthony 2010, 170–173.

⁸³ Zachos 1996; Zachos 2010; Zachos – Douzougli 1999.

exploitation of copper mines in northern Greece is lacking, although it is known that copper is present in many areas (e.g. Pangaion, Chalkidiki, the Rhodopes).⁸⁴ On the other hand, the exploitation of copper, gold and silver mines in southern Greece (Sifnos in the Cyclades and Lavrion in Attica) is not directly attested before the 4th millennium BC,⁸⁵ although isotope analysis of objects found in 5th millennium contexts suggests that it might have started earlier.⁸⁶ What does all of this tell us? That, like in the case of marble, there may have been a north–south transfer of populations connected with the exploration (or the more intensive exploitation) of southern resources, and possibly with the exploration of new techniques.⁸⁷ In this scenario, the ‘entrepreneurial’ and most visible part of the society migrated, leaving behind the rural, more conservative population. The latter was, however, far from being cut from the developments, as illustrated by Mikrothives (an apparently flourishing settlement with a mixed economy, open to exchanges with both the southern Aegean and central Europe)⁸⁸ or its contemporary Doliana in Epirus (a smaller site in a relatively remote mountainous area, which produced pottery displaying connections with central Europe).⁸⁹

Could a similar transfer and exploration of new resources also take place towards the east (Anatolia)? The question deserves to be examined. Such a movement could explain some of the ‘peculiar’ 4th millennium assemblages found there (İkiztepe),⁹⁰ or the presence of a mid-4th millennium bronze workshop as far as Çamlıbel Tarlası, in north-central Anatolia, where ‘ring-idols’ were produced among other items.⁹¹

In summary, in the aforementioned scenario, the 5th millennium Aegean-Balkan civilisation would have dissolved slowly into a number of components, under a series of pressures whose details are still unclear. Some of these components continued to develop locally, whereas others moved further away. In this way, the Late Neolithic/Chalcolithic populations would have abandoned part of the external shape of their socio-economic organisation in the places where it was previously present, but they would have preserved its ‘essence’. The re-composition of the descendants of those original populations, mixed with new ones, produced the phenomena of the late 4th millennium. This same ‘essence’ ultimately afforded a new cultural form, which was different from the previous one, and yet very much alike.

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⁸⁴ The question of gold is put in different terms since it is believed that most of the gold used for Neolithic/Chalcolithic ornaments is of alluvial origin, and, therefore, could be collected in riverbeds.

⁸⁵ Wagner – Weissgerber 1985.

⁸⁶ McGeehan-Liritzis 1988; Gale – Stos-Gale 2008. The validity of the archaeological context is questionable only for the silver jewels from Diros. They were recovered from outside the cave and could actually be of a different date.

⁸⁷ This might be especially true for silver, whose production seems to start earlier in the Aegean than in the Balkans. For the present state of research, see the papers of Kakavogianni et al. 2008, Papadopoulos 2008, Vasilakis 2008.

⁸⁸ Adrymi-Sismani 2007; Tsirtsoni, forthcoming a.

⁸⁹ Douzougli – Zachos 2002. Here too, like in Mikrothives, are found the characteristic ‘Bratislava bowls’; for the distribution of such vessels, see state of research in Bondar 2002.

⁹⁰ Zimmermann 2007, 216–217; Düring 2011, 236.

⁹¹ Schoop 2009, 65, fig. 62.

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