GRAEME LAWSON / CAMBRIDGE

Ancient European lyres: excavated finds and experimental performance today

1. Introduction

Students of ancient musical performance are accustomed to using ancient literature and art as their primary sources. Written descriptions and visual representations form the basis upon which scholars have traditionally sought to recreate the milieux and character of historical and ancient musical performance. This approach has always seemed methodologically sound. Indeed it would be fair to say that 'palaeomusicology' owes its very origins and, even today, much of its direction, to the need to deal with questions posed by historical texts. Consequently such texts have always been – or appeared to be – the natural starting-point in developing our various agenda. This is as true amongst students of the Middle Ages as it is amongst Classicists: as true of the music of *trouvères*, of *minnesänger* and of earlier Germanic epic poets as it is of Homer's. The question 'what did fourth-century Athenian writers mean by the terms *kithára* and *kitharōidós*?' has direct equivalence in the Anglo-Saxonist's 'what did the earliest English writers mean by *hearpe* or *gleobeam*?' and 'who was the Old English *scóp*?'

The most obvious place to begin to tackle these questions – obvious because of the quantity of evidence and its good state of preservation – was of course representational art, where it existed. Manuscript illustrations, carvings and wall-paintings in the Middle Ages; decorative pottery, coins, mosaics, murals and sculpture in the Greek and Roman World: in all of these media music is amongst the activities most frequently represented. Music's cultural importance has afforded us many vital glimpses of musicians in action, from ancient Mesopotamia right through to the European Renaissance and Baroque, and has generated a very considerable secondary literature. Nevertheless representation, however literal or 'photographic' it may appear, is only that: a relaying of some supposed reality by

an artist (or writer) whose competence and interest in doing so are far from explicit. The original meaning of a picture (or text) can only be elicited – if at all – through interpretation; yet any interpretive uncertainty or ambiguity may drastically alter the authenticity of what a document seems to portray. To meet this challenge a considerable effort was needed, developing rigorous methodologies for 'musical iconography' to match those already established in Classical philology. The process continues today. Under the leadership of such pioneers as Emanuel Winternitz, doyen of modern musical iconographers, it became in the 1960s a distinct field of study, evolving its own independent agenda, generating fresh research questions through its own experience.[1]

Document-based questions (and by 'documents' I mean pictorial records as well as texts) have rather come to dominate ancient music studies, especially investigations of musical instruments and their performers. Many of ancient music's current models are iconographical in inspiration (as well as historical in purpose). For many writers, such studies would be not only impossible but *inconceivable* without the documents. For these people a truly *archaeological*, which is to say *finds-based*, approach has few attractions – or is considered premature. A 'prehistoric' approach, taking its agenda from modern ethnographical observation and taking finds as its principal source, is for them simply irrelevant. Nevertheless the iconographical approach has sometimes been characterised (by its advocates) as belonging under the heading 'musical archaeology'. Insofar as it involves study of material relics – in this case surviving images – of music's past, images which have themselves been recovered or observed using archaeological methods, this may seem a fair enough claim. Yet it falls short of what we now consider archaeology, as a mature discipline, to embrace. It continues to treat actual finds as rarities, even exceptions. Thorough, systematic search through archaeological collections is still not a favoured research strategy. When occasional finds of objects have been drawn into the interpretive process, often they have been used only as a means of validating document-based conclusions, anchoring philological or iconological theories in the material world. Often the outcome has seemed to be more questions than answers. In frustration some sceptics, especially in the field of recreative and experimental performance, have turned away, even expressing hostility to due archaeological process.

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[1] Winternitz 1967 and subsequent publications.

However, as it has in so many other areas of historical research, recent progress in archaeological excavation has in reality generated strong archaeological bases for many musical traditions, offering alternative, and at times extremely advantageous viewpoints. With the remains of musical instruments themselves comes all the contextual information which goes with properly excavated, archaeological material. Whether we are interested in their cultural and geographical associations or in the fine details of their design, manufacture and usage, such finds offer a remarkably high order of certainty in the evidence they embody. There are new problems to consider, of course; but there is something very definite, very 'concrete', about their place of deposition, their date, their context and their material structure. There are splendid, as it were 'forensic', opportunities to analyse materials scientifically and trace their sources.

Where such finds complement documentary sources by providing kinds of information which the documents most often do not record, such as details of the materials and methods of construction, or the cultural, geographical or temporal distributions of types, they form new and valuable parts of the familiar jig-saw puzzle. However, where their testimony o v e r l a p s with documentary sources they offer us quite a different opportunity: a chance to test and corroborate. It is this aspect which is to be the principal subject of this paper. Such comparison is often reassuring. Yet at other times it shows just how hazardous it can be – and perhaps always has been – to depend upon the documents alone. As I shall try to show, it draws attention to the unique qualities of hard archaeological evidence and identifies the urgent need to prioritise the search for more. As an archaeologist and prehistorian I find that it also invites a fresh approach in which, rather than simply trying to fit the archaeological evidence into existing historical and iconological models, we may sometimes s t a r t with the archaeological evidence – after the manner of forensic science – and work outwards from there. This has a number of merits, which we might do well to consider.

2. Lyres, lyre-players and heroic poetry in Northern Europe, 2nd–11th century AD

I will take as an illustration, pictures and excavated remains of lyres and lyre-players in Europe, between the 5th and 11th centuries of our era (*ca.* AD 400 – 1100): a period which has long been an interest of mine and for which there is an increasing body of archaeological evidence in which to base (or against which to test) our theories. I will show how the two

kinds of evidence – representational and material – can complement each other, offering a choice of very different perspectives from which to explore the same subjects.

The relationship between North European lyre traditions of the first millennium (which, defying the customary historical 'Classical-Medieval' paradigm, we might label the Roman and post-Roman Iron Age) and those of the Mediterranean traditions which had preceded them during the first millennium BC, is not at all clear. It is not my purpose here to speculate at any length about this, although we could easily spend a whole session doing so. There are, however, significant commonalities. In the 6th and 7th centuries it seems probable that the dominant form of performing art amongst the English, the Franks and their related (though not always friendly) neighbours was heroic and lyric verse, composed in an alliterative vernacular style (non-rhyming, with irregular metre) or in metrical Latin according to tradition and fashion. Examples survive in manuscripts of the 8th to 10th centuries. Such verse we believe was customarily recited or chanted in some way (Latin texts are notated in neumes from the ninth century onwards) to the accompaniment of a plucked stringed instrument of lyre kind, which is itself mentioned in several texts. Of these we now have a good range of archaeological examples, ranging from stray fragments and components to whole instruments which were buried with their owners during the pagan period from the 5th to the 8th century.

The coincidence of lyre as principal stringed instrument in both culture-groups – Late Iron Age Germans and Classical Greeks – is interesting, and is complemented by their parallel choice of both Pan-pipes and reed-pipes as their most favoured wind instruments. Whereas we have known for some time that Pan-pipes were present in the North-West during the early Middle Ages, the extent to which medieval populations there used reed-pipes too is only just becoming clear: recent French and English finds include pipes of wood or bone, from at least as early as the 8th century (AD), some of them played in pairs.

> *A practical demonstration was made, at this point in the paper, of accurate replicas of early medieval instruments, constructed by the writer: a set of box-wood Pan-pipes from York, England, a elder-wood reed-pipe from Lund, Sweden, and a recent, unpublished reed-pipe of deer metatarsus from Northamptonshire, England.*

We are all by now familiar with the sounds of reconstructed Ancient Greek Pan-pipes and reed-pipes, so it is easy for us to identify differences between them and these new medieval parallels. Such differences should not,

however, blind us to the broader, as it were 'family relationship' between the culture-groups, even if it is a distant one. Of course, the archaeological evidence is still very sparse, with too many lacunae in the intervening distances of time and space to allow us to pursue the argument further. The documents too – in my view – afford little reliable support. So I propose here to draw a temporary veil over the questions themselves. What is important for our discussions today is that this generic equivalence between the two culture-groups offers us a n a l o g y, points of comparison both phenomenological and epistemological. In this way the processes by which we interpret the surviving records in, say, England and Germany, may perhaps themselves suggest ways of looking afresh at the Classical and still earlier Greek evidence.

2.1. Ephemera: joints and other structural details of lyres in early medieval art

One such analogy may be found in remains and images of details of joinery: the wood-working methods used to join and secure the various structural pieces of instruments' bodies and frames. Illustrations on Attic red-figure vases of lyres of tortoise-shell types (again, as an archaeologist I feel uncomfortable with the implications of conventional historical nomenclature such as *lyra* and *barbiton*[2]) frequently show detail at the joining-points in the instruments' upper frameworks. The same structures occur, even more clearly, in some of the surviving sculptural sources, such as the 5th-century Boston Relief.[3] No written source describes the functions of these devices; nevertheless, from the images, which are remarkably consistent in their representation, we can develop structural interpretations of just how they must have been shaped and how they worked. Close inspection of the surviving wooden remains in the British Museum (the so-called Elgin lyre[4]) makes plain the technological reality behind the depictions and confirms their accuracy.[5] Such detail is interesting and informative – indeed essential – to anyone proposing to build such a lyre today. It is a highly sophisticated kind of joint. But its cleverness, and the reason for its

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[2] For a discussion of the interpretive hazards of applying ancient nomenclature within an archaeological context see Lawson 1980, 9f.

[3] Boston, Massachusetts: Museum of Fine Art, Inv. no 17; cf. e.g. Young/Ashmole 1968, 150–154.

[4] London: British Museum, Inv. no. 16 6–10 501.

[5] Lawson 1980a, Fig. 5.22.

strength, would have been largely hidden from view when assembled. So what is perhaps most remarkable about it is that Athenian artists and their imitators thought such a thing important enough to show, and show so well. As far as we can tell, it is purely a structural device and can have had no direct effect upon the sound of the instrument or the way it was played: so why feature it? Interestingly, precisely the same phenomenon occurs, equally inexplicably, in illustrations more than a thousand years later in England.

King David, the biblical Psalmist and ancestor of Christ, is frequently represented in 8th-century and later Western manuscript art, playing his stringed instrument (representing the Latin *cithara*, which is generally glossed in Old English as *hearpe* or 'harp'). The poet-king of the Psalms was one of those figures in the new Christian pantheon which clearly appealed to the pagan Germanic imagination, the cultured warrior-patriarch being already familiar and revered within their own world. Judiciously interpreted by Roman missionaries, he was no doubt one of those elements of Judaeo-Christian heritage which eased the conversion of the Anglo-Saxons from heathenism in the early years of the 7th century, so it is not wholly surprising to find that his images soon appear to show him playing contemporary North European instruments of lyre type: instruments which students of the Classical *kithára* and related lyres should find familiar both for their general form and size and also for the way they seem to be played.[6] Two of the earliest and best-drawn are in English manuscripts of the 8th century: the so-called 'Canterbury' or 'Vespasian' Psalter[7] and an 8th-century copy of Cassiodorus' commentary *On the Psalms* preserved in Durham Cathedral (Figure 1).[8] These two illustrations are demonstrably independent of each other – no mere copies of the same original – and indeed they show the instrument from opposite sides: from the front and from the back respectively. Yet each bears similar tiny – and to our eyes very insignificant – marks at the upper ends of its arms. This is especially strange because the frames of such lyres are smoothly curved around the top to form a rounded arch – the functional equivalent of the Attic lyres' straight cross-bars – giving the impression that the superstructure is shaped seamlessly from one single piece of wood. From the pictures we might ar-

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[6] For probably the most influential philological study of such images and their meanings see Steger 1961a.

[7] British Library MS Cotton Vespasian A.I, folio 30 *verso*; see Galpin 1910, revised 3rd ed. 1978, Plate 2.

[8] See also Kendrick 1972, Plate LIV.

Figure 1: Lyre, England, 8th century AD.
Durham Cathedral Chapter Library, manuscript copy of Cassiodorus, *In Psalmos*, MS B.II.30, folio 81 verso. Photograph ©1976 the Dean and Chapter, Durham Cathedral.

gue that it could have been: but we now know that it was not. Examination of surviving lyres from burials of the 6th and 7th centuries show that the arch was indeed separate, like the Greek, and skilfully jointed at precisely the points indicated in the manuscript pictures: so the artists are once again depicting a joint-structure which is important structurally yet has little or no direct bearing on the musician and his performance. What can this mean? Was there some symbolic value in these joints: was there an awareness of their structural strength (or weakness!) and a desire to feature it in some way? Whatever else, it certainly seems to indicate that the 8th-century artists, like the ancient Greeks, had a strikingly intimate knowledge of the hardware they were illustrating.

2.2. Ephemera: lyre wrist-straps in early medieval manuscript paintings

Close inspection of such illustrations is always advisable, and often rewarding. Whoever penned the Durham David disclosed another tell-tale glimpse of underlying reality. Taking advantage of the unusual perspective he has chosen, showing the instrument from behind, he has drawn in a ribbon-like feature running around the player's left wrist and attached to the mid-point of the instrument.[9] You need to look carefully to see it because it is faint, and for a long time scholars failed to detect it. The best-known published illustration was of a 19th-century facsimile, hand-drawn rather than photographic, reportedly by J.O. Westwood. Despite commendable authenticity of reproduction in other respects the copyist seems to have overlooked this fine detail, perhaps because he was working only from photographs himself. Once the image was reproduced in the musical literature, careless editing soon lost it its 'facsimile' label and it came to be accepted as the real thing – for example being re-drawn by Schlesinger;[10] then re-photographed by Panum;[11] and so on. This was unfortunate because, from the point of view of musical performance, this is a very important feature indeed. Such suspension-straps, as we all know, are frequently shown attached to ancient Greek lyres, of all types, where their technical importance is manifest. They can also be discerned – once we are alerted to the possibility – in later illustrations of lyres, albeit rarely and often enigmatically: a very late Anglo-Saxon example may be shown on an instrument in the hands of David's assistant, Eman, in an early 11th-century psalter in Cambridge University Library.[12] But, most remarkably, they occur once again in the new archaeological record: amongst fragments of lyres from musicians' graves of the 6th and 7th centuries.

The first scholar to come to grips with this archaeological material was Rupert Bruce-Mitford and the occasion was the discovery, in 1939, of a portion of a stringed instrument amongst the grave-goods in the 7th-century royal ship-burial at Sutton Hoo, on its hilltop overlooking the estuary of the River Deben in Suffolk, England. His early attempts to unravel its

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9 Lawson 1978a, 92–95; 1980, 156.

10 Schlesinger 1910; 1969 ed., 334, Fig. 113.

11 Panum 1915; 1940, 96, Fig. 82. Indeed both Schlesinger and Panum seem inaccurate in their citation, attributing the figure to Westwood's *Palaeographia Sacra Pictoria*. No such illustration is present in either of the editions in Cambridge University Library – the original or the recent facsimile reprint (Westwood 1843–45; 1988).

12 MS Ff.I.23, folio 4 verso; Galpin 1910 [1978], Plate 38.

mysteries were hampered by its incomplete condition (only part of one side survived, giving it an asymmetrical appearance) and the certainty of philologists that OE *hearpe* and *hearpan* must be synonymous with modern English *harp* and *harping*. Such beliefs were justified, it seemed, by a small scatter of early medieval illustrations in manuscripts and on stone reliefs showing harp-like instruments of various (though often vaguely executed) shapes and sizes, triangular or quadrangular. Thus Bruce-Mitford's first essay in reconstruction (in collaboration with Messrs. Dolmetsch & Co. of Haslemere) saw the fragments interpreted as part of a small harp.[13] Its launch was a memorable moment in Anglo-Saxon archaeology. It soon became apparent, however, that the archaeological facts did not fit the document-based theory entirely comfortably. So, during the 1960s, he undertook a thorough review of all the available evidence, including a search for more Anglo-Saxon fragments; and on its completion he was able to propose a new, quite different reconstruction. Based on archaeological finds from Continental Europe, in particular from near-contemporary graves at Cologne and at Oberflacht, Württemberg, the Sutton Hoo harp now became a lyre.[14]

This caused quite a stir, not least amongst scholars of Old English literature. Many have still – to this day – not quite abandoned thoughts of harps and harping. Nevertheless Bruce-Mitford was able to establish that the lyre was indeed the dominant instrument-form in England in the 7th century and earlier. Revisiting finds from aristocratic graves at Taplow in Buckinghamshire, and Abingdon in Berkshire, he showed that they too included remains of closely similar instruments, previously unrecognized. Their six-stringed forms suggested in turn a relationship to several stray finds of instrument-bridges, from Broa, Halla (Gotland, Sweden), Elisenhof (Schleswig-Holstein), Dorestad (Netherlands) and Concevreux (Aisne, France). Harps were nowhere to be seen. The philological background came under further critical review when, in the following year, Steger published his authoritative treatment of the whole early medieval etymology, both Latin and vernacular.[15] By 1975 research by the present writer had begun identifying yet more fragments of lyres from graves in 6th-century

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[13] Bruce-Mitford 1948.

[14] Bruce-Mitford 1970. By the mid-1950s there was already a considerable literature touching upon lyre finds in Germany, comprising both archaeological reports (e.g. Menzel/Dürrich 1847; Veeck 1931; Fremersdorf 1943) and music-historical studies (e.g. Behn 1925 and 1954; Werner 1954; Niemeyer 1955). It continues to expand.

[15] Steger 1971, especially 29–37.

inhumation cemeteries in East Anglia.[16] With the discovery of further examples, including recently an important find from an inhumation cemetery at Snape in Suffolk,[17] the case now appears established beyond reasonable doubt. Still there are no harps. Evidently, to the Anglo-Saxons *hearpe* did not mean quite what we understood it to mean.

Already in the 1970s, debate about these lyre-finds was moving on, from the question of identification to the nature of details, and their significance for the reconstruction and recreation of performance practices. Experience with ancient Greek lyres, and a growing dissatisfaction with the very unimaginative playing techniques then being advocated for their Germanic counterparts, led the present writer to consider the possibility of a more active technical function for the player's left hand, especially if liberated by the use of a wrist-strap. The question became pressing in 1975 with the discovery at Bergh Apton, Norfolk, of the remains of a lyre with bronze fitments, possibly the attachments for such a strap.[18] Bruce-Mitford and colleagues at the British Museum were then able to report that at Taplow they had located bronze fittings associated with another leather strap, lying very close to the lyre, which they thought might offer a parallel, though because there were other items in the grave to which these may have belonged the musical association remained unconfirmed.[19] Angela Evans has subsequently expressed further doubts[20] and it may indeed be that the Taplow pieces are not strictly relevant. However, in the lyre-grave excavated in 1992 at Snape in Suffolk, a strap of textile with metal fittings, including a pair of small figure-8 loops of bronze, again seems to be closely associated with the instrument.[21]

Such straps have very important implications for especially the operation of the player's left hand during performance. Not only does the strap support the instrument, safely suspended from the wrist: it also frees the supporting hand to play a dexterous role in fingering the strings. Experimental tests reveal the enormous technical potential this unlocks. From an instrument which had previously invited only simple tunes, picked out with the fore-finger of the right hand, it becomes a thorough-bred machine capable of making sense both of Old English descriptions of skilled playing and

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16 Lawson 1978a; 1987; also Bruce-Mitford 1983, 716f.

17 Lawson 2001.

18 Lawson 1978a.

19 Bruce-Mitford 1983, 714f.

20 Evans, personal communication.

21 Lawson 2001.

of the very considerable skill and labour evidently invested by those who built the lyres we have excavated.

> *A second practical demonstration was made, at this point in the paper, of playing-techniques consistent with the design of the Anglo-Saxon instrument, its images in manuscript paintings and references to it in surviving OE literature. The instrument used was a reconstruction, by the writer, incorporating the structure and fitments of the Bergh Apton find.*
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> (cf. Audio Example 1)[22]

All this is dependent upon the presence of a strap which would have been so insignificant, to look at, as to be almost unnoticeable to the casual observer. Yet there it is, delicately penned in the Durham MS. Once again the impression seems confirmed: that these old illustrators really did have personal familiarity with the appearance of the instruments they were illustrating. The only question is: just how far was a u t h e n t i c i t y their aim?

3. Discrepancies between representation and reality

Further inspection reveals some strange discrepancies between artistic representation and actual practice. Let me begin with the reality.

3.1. Width-length proportion

It is a curious feature of their archaeological record that, where there is evidence of their original lengths, these early medieval lyres reveal a markedly elongate form: very long and surprisingly narrow. Finds from Germany show this very clearly. At Cologne for example (the shortest, at a length of 50 cm) the relationship between the width of the sound-box and the lyre's overall length is 1 : 2.9 (1 : 2.6 at the top where it is wider). In the now lost but originally complete 80cm-long Oberflacht instrument[23] it was even more pronounced, at around 1 : 4.6 (1 : 3.8 at the top), while the other, more fragmented Oberflacht lyre, preserved in the Württembergisches Landesmuseum in Stuttgart,[24] suggests a closely similar ratio within an overall length of not less than 72 cm. The English examples are less well preserved, and metrical data is more difficult to reconstruct: nevertheless at Sutton Hoo, England's 'type site' for this class of instrument, the surviving length of the lyre's arms suggests a closely similar elongation, and there-

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[22] The Audio Examples are available on the computer-readable section of the accompanying CD.

[23] Veeck 1931, Taf. 4 B (9); Schiek 1992, Tafel 61 'Grab 84'.

[24] Paulsen/Schach-Dörges 1972, 100, Abb. 69; Schiek 1992, Tafel 33 'Grab 37'.

fore, with a width of about 20 cm, a comparable ratio. So it is interesting – and perhaps worrying – to discover that the same instruments, when illustrated, appear to show a subtly different, broader silhouette.[25] In the Durham Cassiodorus MS the ratio portrayed is 1:2.7. In the Canterbury Psalter it is 1:2.2. A 9th-century relief at Masham, Yorkshire, in quite a different medium, shows a waisted form with a ratio of 1:2.2 (1:2.1 at the top) while at Cividale, Italy, in a late 10th-century manuscript from the Reichenau,[26] a closely similar instrument is shown with a ratio of 1:2.3 at the sound-box, reducing to 1:1.7 at the top.[27] As we proceed into the Middle Ages, both in David iconography and in other contexts (such as scenes of Gunnar 'vin Borgunda' and his *harpa* in Nordic art, and images of lyre-players in the Utrecht Psalter and later neo-Classical illustration), such disparity clearly continues to grow. Extravagant, impractical forms appear.[28] Yet by contrast archaeological finds show the old narrow forms continuing until at least the 11th century.[29] Evidently, for some unknown reason, artists' perceptions and instrument-makers' designs do not match. We do not know why or how this mismatch began. And without the finds we would not know that it had happened at all.

3.2. String numbers

A second troubling disparity concerns string-numbers. In Durham's 8th-century Cassiodorus manuscript David's lyre carries five strings. The Canterbury Psalter and the Cividale codex, on the other hand, show six; elsewhere we see seven or more, sometimes fewer. There appears, in short, to be no agreement. Yet in the archaeology the message is abundantly clear and consistent. All wooden superstructures show holes for six tuning-pegs, while (with only two outlying exceptions of poor manufacture) all bridges show six notches. I will demonstrate some of the performance implications of this numerical standardisation shortly, because it is musically significant.

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[25] Lawson 1981, 238 and Fig. 7.

[26] The *Codex Gertrudianis*: Cividale, Museo Archeologico, MS Sacr. CXXXVI, folio 20 *verso*. For a good black-and-white illustration see Paulsen/Schach-Dörges 1972, 105; Abb. 72. For a colour image (like the Durham lyre, this lyre has bright red strings – and the body is covered in gold leaf) see Lawson 1980a, Plate 8A.

[27] Lawson 1981, Fig. 7 G and H.

[28] For a representative selection of Continental examples see Steger 1961a; also 1961b and 1971.

[29] Lawson 1984a.

But what I want to point out at this stage is simply the further variance between art and reality, in something as fundamental (from a musician's point of view) as string number. Once again, without the archaeological finds we would have not the faintest idea of the special importance which the number 6 clearly held – and indeed maintained for nearly a thousand years.

3.3. Bridge size

As with string number so, finally, with the size of the bridge.[30] Unfortunately, few illustrations of lyres show bridges. This is, in itself, an interesting and perhaps significant oversight. A notable exception can be seen in a later English manuscript, the 12th-century Harley Psalter.[31] This is a good, large bridge, with two broad feet and a flat string-bearing surface (albeit supporting seven strings!). Other details of the instrument seem reassuring. Using the proportions of King David and the lyre itself (as we do for the Ancient Greek *kithára*) we can estimate the size of the bridge – as the artist wished to represent it – to be not less than 8 cm wide, overall, and 4.5 cm across the strings. Elsewhere, where bridges are omitted or hidden, bridge size nevertheless remains implicit in the angle through which the strings fan out from their attachment at the base of the instrument. To take the Durham manuscript as an example: if we assume that the bridge would lie – very roughly – at the mid-point of the resonator, and if we assume the width of the instrument to be approximately 20 cm (it could hardly be less), then the bridge must be 4 cm across its string-bearing surface. In the Canterbury Psalter it would be 5.5 cm. So the pictorial record – like the Ancient Greek evidence – supports substantial bridges.

But when we look at the archaeological evidence there is yet again a remarkable – and even more worrying – conflict. These finds certainly exhibit a flat string-array, like the one shown in the Harley MS; but the whole

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[30] The bridge of an early medieval lyre is functionally identical with that of the modern violin. It stands at or close to the centre of the instrument's sound-board (the thin wooden lid which covers the hollowed-out body or resonator) and conveys the vibrations of the strings, which are stretched across it, to the resonator where they are amplified. The name *bridge* (Scandinavian *stall*, German *Steg*, Italian *ponticello*) aptly describes both its appearance, having two feet connected by an arch, and also something of its structural role, since it must withstand considerable loading from the strings.

[31] London, British Library MS Harley 2804, folio 3 verso; Panum 1940, 96, Fig. 83; Lawson 1981, Fig. 7 L.

array typically spans not 5 cm but only 1.5 cm. These are all truly t i n y bridges. Any one of them could fit easily inside a small match-box. What should we make of this? Why is there such disparity between them and their depiction? What insight might it afford us into the practical, musical operation and purpose of these – and other – lyres? Recent experimental work has shown that such small bridges have a very significant technical, musical implication indeed.

4. Recreating early North-west European lyre techniques

4.1. Ergonometry

Performance characteristics of musical instruments need to be understood in terms not just of their acoustical properties but also of what engineers term their e r g o n o m i c s . Designs of instruments, like other human artefacts, are products of a variety of competing demands, both at a technical level and more generally within the broader cultural background. Customary practice in either manufacture or use may limit change. Changes of taste in music, and fashion in craft work, on the other hand, may accelerate it. Sometimes there may be other aesthetics at work besides: visual aesthetics for example, using colours, shapes, precious metals or other devices to identify and proclaim the status of the instruments, their musicians, their patrons or their music. There may be elements symbolising religious association, gender, ethnicity, kinship. But at all times there are practical considerations to be met: a constant striving, with each new making, to keep the tool (which is what a musical instrument is) fitted as well as may be to the practicalities of its prime task – in this case its role in musical performance. Such practicality applies to all functional tools: whether musical instrument or pottery vessel, chariot wheel or metal blade. If we accept that their designs are in part the outcome of such pressures then we can begin to trace 'back-bearings', probing forms to help identify intended function. Archaeologists, and especially typologists, are accustomed to doing so: using handling-characteristics to distinguish infantry swords from cavalry swords, for example, or flint scrapers from flint points; assessing the practical implications of different pottery types; considering the speed, stability and seaworthiness of different shapes of boats. The science of relating form to function we call e r g o n o m e t r y . The objects – or their images – provide us with parameters within which we can construct replicas; through practical experimentation we may gain experiences and recover ergonomic data which we can then use to build – and test – our theoretical models.

The practical value, and some of the musical implications, of contrasting features of different musical instruments can be demonstrated by experiment. Earlier I introduced and demonstrated replicas to illustrate generic resemblances between ancient Greek and early medieval 'material music-cultures'. If we examine these again we can see how the individual types – Pan-pipes, reed-pipes and flutes – differ from each other in musical character, both in the kinds of sounds they make (which we can hear) and in the kinds of voicing and fingering techniques which their contrasting designs seem to demand or encourage (which we can experience when we play them). Different kinds of instruments do not just look and sound different: they handle differently too; and this controls and influences the way their music can be articulated.

> *At this point in the paper, the replicas of Pan-pipes, wooden reed-pipe and bone double-pipe were re-introduced and briefly demonstrated again, pointing out how their forms encouraged and discouraged different voicing techniques and finger-actions. For further discussion see Lawson 1999.*

This same approach can be applied to contrasting forms of stringed instruments. Figure 2 shows reconstructions of the principal components of an Anglo-Saxon lyre.

> *At this point, lyres – two of a number of such instruments built by the writer – were introduced and demonstrated: a reconstruction of the remains found at Bergh Apton and (for contrast) an experimental reconstruction using the measurements suggested by the illustration in the 8th-century Cassiodorus MS in Durham.*[32]

Notice the length of the instrument, and the length of the 'hand-hole' through which the left hand is able to contact the strings from behind. The arms are hollow and the structure light in weight, typically not more than 500–800 grammes fully strung. Note also the six strings (assumed to be of gut), the very small bridge, and the wrist-strap. The practical potential of all these features, and some of their implications, can be demonstrated by experiment.

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[32] The same instruments can be heard demonstrated by the present writer, using advanced lyre techniques, on the recordings *Sounds of the Viking Age* (Lawson 1985) and *Fornnordiska Klanger* (Lund 1984; 1991) respectively. The latter is now strung with horse-hair, to demonstrate the practicality (and sound) of hair as an alternative stringing material. Such hair-stringing is recorded in Wales and Scandinavia later in the Middle Ages and in the Baltic area in more recent *tallharpa*/*tagelharpa* ('horse-hair harp') and *jouhikko* lyre tradition (e.g. Andersson 1930).

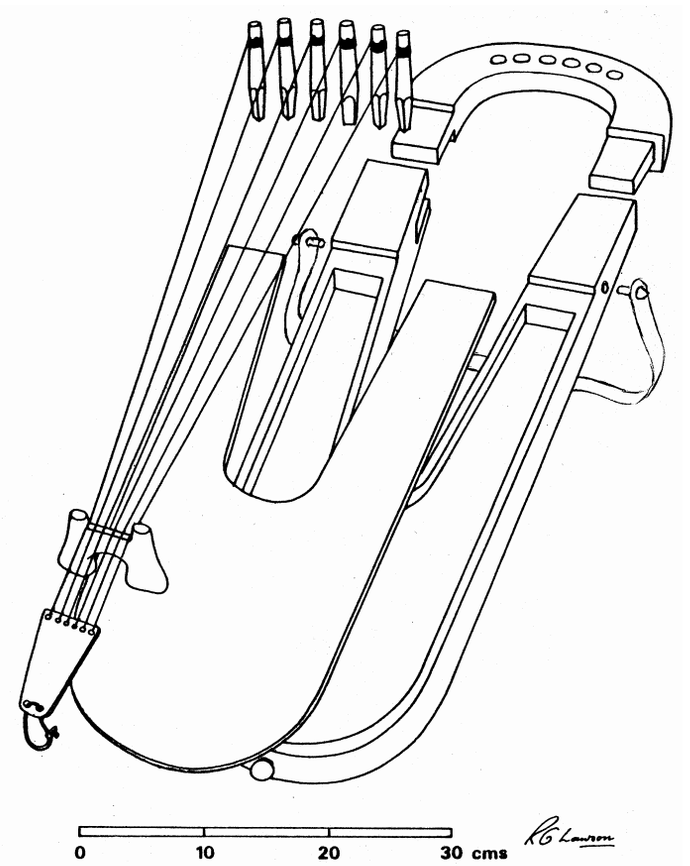

Figure 2: Early medieval lyre, exploded view,
showing the usual principles of construction and method of stringing.
The proportions are taken from the illustration of King David's lyre in the 8th-century Durham manuscript B.II.30. Other illustrations, and actual finds, vary in proportion and minor details. Drawing: G. Lawson (from Lawson 1980a, Fig. 10.3).

The evidence of a wrist strap at Bergh Apton comprised two small bronze dome-headed pins located symmetrically in holes in the o u t s i d e face of each arm, about half-way along its length. Interestingly, they were fixed in place firmly – but not permanently – using a 'push-in' method with little packing-strips of metal to achieve a tight fit, perhaps for ease of removal or adjustment (screw-threaded attachments being unknown at this time).

In this reconstruction the strap is made of braided textile, passed behind and looped once around the player's left wrist for firmness. It works

well when the player is seated. The pins are set much too high on the frame to allow the instrument to be suspended freely from the strap when standing. However, a seated position is consistent with the images of the seated psalmist king David, and also the words of the Old English gnomic poem *The Fortunes of Men* in which we hear of the *hearpe*-player at work in the mead-hall: 'Someone shall s i t with his harp at his lord's feet, to receive his fee...' (OE 'Sum sceal mid hearpan æt his hlafordes fotum s i t t a n, feoh þicgan...'[33]).

The bottom half of the Bergh Apton lyre and all its lower fittings were lost because that part of the grave had suffered soil-disturbance: the reconstruction therefore incorporates a replica of the small bronze bridge from Scole in Suffolk, with notches for six strings of course, and the instrument's original total length has been estimated at 79 cm, consistent with the Oberflacht finds. The vibrating length of the strings is set at 58 cm, and the instrument tuned – for the purpose of this demonstration – to the first six notes of a heptatonic major scale starting (in terms of modern 'concert pitch') on the F above Middle C.[34]

If, firstly, I grip the instrument's right arm in my left hand and pluck the strings with my right hand I can play you any melody provided that it has a compass of 6 notes or less. I cannot vary the pitches of the strings by fingering them with my left hand because there is no finger-board and, consequently, if I touch them they cease to sound. However, if I wish to employ a different compass, or a different mode within the same compass, it is a simple matter to re-tune. Rapid finger-picking with the right hand, in the style of the guitar, is difficult because the strings are grouped so close together at the bridge, but it can be done by raising the hand higher up the strings. The presence of the wrist-strap enables me to use the fingers of my left hand to complement this right-hand action, either by adding a drone or even a second melodic part, all within the same six-note compass.

These capabilities were demonstrated, separately and in combination.
(cf. Audio Example 2)

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[33] Shippey 1976, 60.

[34] The instrument is capable of withstanding higher tensions, and thereby generating higher pitches: on this occasion, however, damage sustained by the instrument in transit to Vienna prevented these from being explored with confidence. Adoption of this heptatonic scale, with the semitone between strings 3 and 4, is based on the late 9th-century treatise *De harmonica institutione* of Hucbald of St Amand, Flanders (Babb/Palisca 1978, 22) and is discussed in Lawson 1980a (151–3 and Fig. 7.21).

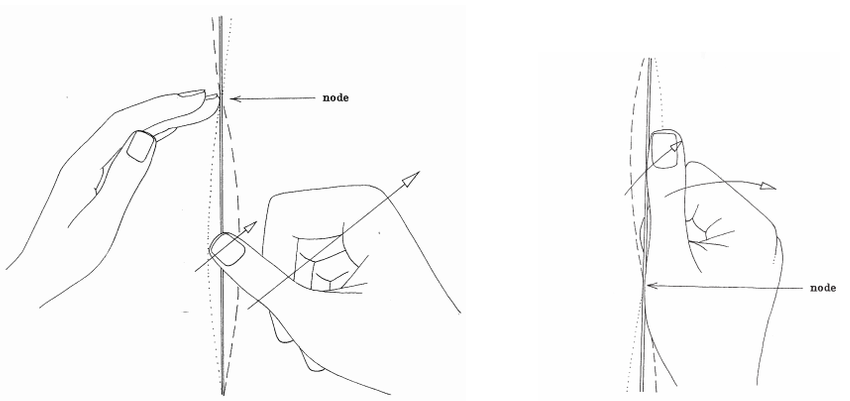

Figure 3: Sounding harmonics on an open lyre-string
left: experimental two-handed action
right: experimental single-handed action
Drawing: G. Lawson (from Lawson 1980, Fig. 7.32, f-g)

In addition to such basic techniques, which (it must be said) offer only limited scope for musical variety, the design of the instrument enables me to ring a series of harmonic overtones from each string by touching the harmonic nodes with my left as I pluck with my right (Figure 3, left). Typically four harmonics are readily obtainable: the octave, the fifth above that, the next octave and the major third above that. They can also be sounded single-handed (Figure 3, right). This already introduces a much greater melodic – and modal – range. And note how the very long hand-hole (which is such a peculiar characteristic of these lyres) now enables the left hand to sound the same harmonics independently from behind. In this way a compound technique can be employed, in which, if desired, the hands can perform quite different-sounding functions.

These more advanced capabilities were demonstrated, separately and in combination. (cf. Audio Example 2)

A further, quite different technique, enabled and indeed encouraged by the small size of the bridge and large hand-hole, comprises a combination of right-handed strumming and left-handed stopping, after the manner of surviving East African lyre traditions. The thumb-nail and, if necessary, the finger-nails of the right hand contact the strings close to the bridge, in a stroking action, back and forth, whilst the fingers of the left stop (i.e. deaden) those strings which are not to sound (Figure 4). In this way, with 6 strings, one or more strings can be left to ring out, and by varying his or her finger-positions the player can play melodies, melodies with drone, and

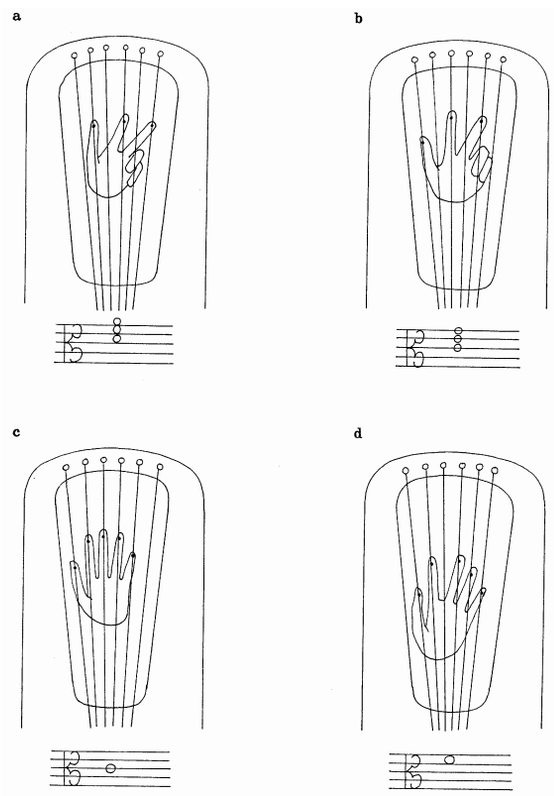

Figure 4: Experimental left-hand damping action to accompany right-handed strumming
a-b: leaving three strings free to sound together
c-d: sounding only one string at a time
Drawing: G. Lawson (from Lawson 1980a, Fig. 7.26).

even (with practice) two-part melodies. By varying the energy and speed with which the nails of the right hand strike the strings a wide range of textures can be obtained, from a soft continuous shimmer to dramatic rhythmic strokes.

These strumming techniques were demonstrated. (cf. Audio Example 1)

All these methods, and especially the last, are consistent with the hand-positions shown in images of lyre-players of this period and also with the verbs used in Old English to describe *hearpe*-playing actions: for example *astyrian*, to stir, and *gretan*, to greet or attack (the strings). They also seem justified, as a general principle, by allusions in the literature to high levels of energy and dexterity. These instruments were evidently playable ‘mid

cræfte'[35] and I am sure that they are still capable of much greater technical development and refinement than anything I have demonstrated. Indeed I suspect we have hardly even begun to realise their full capabilities.

5. Bridges and their implications for reconstructing Classical lyre techniques and tradition

What is remarkable about these experimental results, for the purpose of this meeting, is the extent to which the form and size of the bridge, as well as the open strings, the wrist-strap and the very long hand-hole, inform our appreciation of the way the instruments could have been played. The bridge defines closely some central elements of the lyre's technical capabilities. Although bridges may embody different materials and contrasting kinds of decoration, from the simple elegance of amber forms (Figure 5) to fancy animal-headed forms in bronze, there is clearly a rigorous consistency in the flatness of the string-bearing surface and, most importantly, in its narrowness. Indeed these consistencies must represent a powerful tradition.[36] Whilst most bridges are of the 6th to 8th centuries, the latest, a stray wooden example from 10th-century York, England, still accommodates 6 strings. Although 200 years on, these continue to occupy a span of only 1.7 cm.[37] The known geographical range of the phenomenon already embraces the Netherlands, the island of Gotland in the Baltic Sea, Suffolk in England and the Aisne Valley in northern France. The 6-string tradition with which it seems to be associated, moreover, first appears in the archaeological record as early as the 2nd century, in a settlement at Habenhausen near Bremen, N. Germany,[38] and is evidently still current nearly 900 years later in the 11th, at nearby Haithabu, Schleswig-Holstein.[39]

The dichotomy between such smallness, consistently maintained throughout the archaeological record, and the large sizes implied in the pictorial sources, is a challenge, as well as a surprise. It may also be a wake-up call: had we not had the good fortune to find the bridges which we have, we would be left drawing some quite incorrect inferences from the pictures. Indeed performers who have experimented without proper regard

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35 Lawson 1989, 5.

36 Lawson 2004.

37 This measurement, taken by me in March 1983 (courtesy of the York Archaeological Trust), does not allow for shrinkage and other distortion in conservation; but the original dimension seems very unlikely to have exceeded this by more than about 5%.

38 Bischop 2002, 215–217.

39 Lawson 1984a.

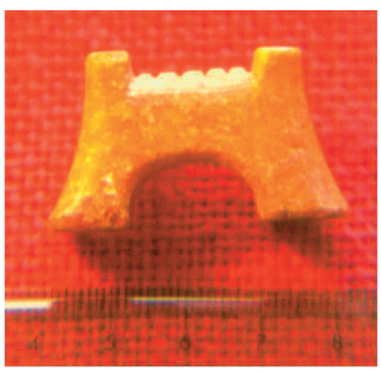

Figure 5: Lyre bridge of Baltic amber, 8th century.

From a horseman's grave at Broa, Halla parish, Gotland, Sweden. The distance between the 1st and 6th notches is only 1.5cm. Photograph: G. Lawson 1976, courtesy of Statens Historiska Museum, Stockholm.

for the archaeological finds have frequently done so. For example, the effect which such experiments have most often obtained has been limited to a harp-like plucking technique: sweet, certainly; but the quietness of the output sound has not been wholly convincing: plausible for intimate 'chamber' recital maybe but, in the context of the revelry of the mead-hall (the lyre's most documented milieu) placing difficult demands on performer and audience alike. Such problems evaporate with the arrival of robust strumming techniques.

Now, in the context of this conference and its theme of recreative performance in the Classical and pre-Classical world, it seems to me that the same question of bridge size is worth asking, rather urgently, of Classical and earlier *instrumentaria* also. So far – to my knowledge – the Mediterranean and Aegean areas have failed to yield (or at any rate publish) any such material find. We have some putative tail-piece structures, but as yet no bridge. Not one. This is surely, at best, a handicap! It is true that they are frequently and well illustrated; but what if the illustrations are wrong, or in some way biassed? It is by no means impossible. Our complete reliance upon them is alarming. Can we really go on neglecting to question the dimensions and proportions and details they purport to offer us? To be sure, we are accustomed to question s o m e of the details of the same illustrations: enigmatic lines and brush-strokes which seem difficult to interpret; but are we not investing too much trust in other details just because they seem clear and consistent? Are we in fact in danger of being hypnotised by the sheer quantity of our data?

Neither clarity nor consistency, nor indeed quantity, is any guarantee of authenticity. The consistency of disproportion in early medieval representations of lyre-bodies has already provided evidence of this; depicted numbers of strings another. Still another may be seen in images of lyres in Roman and post-Roman art, whose evolution culminates in a box-like, evidently *kithára*-related instrument in late Roman and Byzantine-derived manuscript painting in the West – the so-called Paris Psalter tradition.[40] These strange structures seem consistent enough, amongst themselves; but to my mind they are structurally unconvincing. Moreover, unlike other Roman stringed instruments they seem to have no representation outside the decorative arts.[41] Could they simply be echoing and perpetuating, artificially, what was by then only supposed or dimly remembered to have been a Classical form, without a clear basis in contemporary musical reality?[42]

6. The need for more archaeological research and survey

So what is to be done? Somehow we must find some archaeological corroboration: but how? It seems to me that, first and foremost, we need to consider the part we should be playing in the search for new finds. I am now going to have to try to be very diplomatic. In my own experience a major problem for past investigators – and here I mean musicologists and organologists – has been a tendency to be too diffident in approaching the finds-assemblages, and particularly in discussions with the field- and museum-archaeologists who are responsible for identifying and conserving them. When, in response to our enquiries, these have said that they have 'no such finds' we have too often taken their word for it. Sometimes it may seem as though we have little choice but to do this. The openness of excavators and curators to this kind of interaction varies considerably, ac-

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[40] For the instrument as it appears in the Paris Psalter itself (Paris, Bibliothèque Nationale, Gr. 139, folio 1 verso) and some similar instruments, see Lawson 1980a, Fig. 8.5.

[41] At this point in the paper Maurice Byrne interjected that he may have found support for a contemporary reality for such instruments. The present writer remains for the moment doubtful, in the absence of hard archaeological evidence. Stelios Psaroudakēs volunteered the thought that illustrations of lyres, shown apparently without resonators, in Minoan art such as the Pylos fresco and Ayia Triada sarcophagus, have increasingly seemed to him to represent simply some quirk of perspective; this is my suspicion too. Indeed I think it is probably a very widespread problem.

[42] Lawson 1980a, 177–181; Fig. 8.4–6.

cording to prevailing cultural – and even individual – circumstances. Frequently doors have been shut to us. I have myself been given an unceremonious rebuff by one curator who preferred to see his unique assemblage of Roman lute tuning-pegs as amulets on a necklace, as though his reputation depended rather on maintaining his first interpretation than on his openness to new ideas. It is not a unique case: indeed many here will have similar stories to tell. But we must somehow overcome such difficulties if we are to get access of the kind we need: not just to 'identified' objects displayed in glass cases or published in journals but to the cigarette-tins and shoe-boxes of 'mystery objects' in curators' cupboards, and all those plastic bags on the bottom shelves of museum-basements where the 'miscellaneous unidentified fragments' are stored. This is where stringed-instrument fragments are to be found.

So, what we need to develop, first and foremost, is a relationship with museum staff and fieldworkers which is based on mutual trust and respect. To achieve it we must secure their confidence, and engage their curiosity. We must publish our research questions clearly and succinctly in the archaeological literature, in archaeological language, so that archaeologists can see for themselves and understand their importance, and feel encouraged to take part in our process. We must report new finds, or revisit existing ones, to help reveal the nature of the problem and show the way forward. Some researchers, of course, are already doing this, in different parts of the world. In England we began in the mid-1970s to circulate handlists, *Guides* and *Datasheets* amongst excavators and conservators throughout the United Kingdom, under the aegis of the Cambridge Music-archaeological Survey[43] and through the United Kingdom Institute for Conservation.[44] The same information was circulated simultaneously in Scandinavia in collaboration with the then Swedish national music-archaeological survey, Riksinventeringen, in Stockholm.[45] The results were – and continue to be – very gratifying. Experience gained in the process has shown that it is a small step from publishing such friendly interventions to being invited to take a meaningful part in the excavation and post-excavation process.

There is no reason why, ultimately, the same strategy should not prove fruitful everywhere. By presenting our specialism to excavators, conservators and curators, not as a special case requiring their help but as a useful

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43 E.g. Lawson 1975; 1982.

44 Lawson 1980b.

45 Lawson 1978b.

resource which we are prepared to make available to them, we will have established a mutually beneficial rapport which should ensure that new finds are quickly recognized and – while there is still time – our knowledge can be factored into their conservation regimes. Then we may begin to maximise the chances of recovering some of these fragile structures in the future.

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