

Let us ignore the seven-stringed musical instrument shown on the *Ayia Triadha* sarcophagus, because evidence from the Late Bronze Age may be thought too remote to be relevant to early Hellenic musical practice. Let us also leave aside ancient opinions associating Terpander with the seven-stringed lyre (Strabo 618) and assigning him to the first half of the seventh century B.C. (Athenaios 635E). Dr West may well regard the putting of trust in such testimonies as evidence of incorrigible amateurism. There remains, nevertheless, a contemporary witness to the existence of seven-stringed lyres amongst the Greeks of the seventh century B.C.

In *JHS* lxxi (1951) 248, fig. 8, there is illustrated a fragment of a Subgeometric dinos of the first half of the seventh century B.C. from the excavations at Old Smyrna.¹ On the piece is painted a seven-stringed lyre. The lines representing strings are carefully distinguished and spaced. It would be extravagant to assert that the artist could not count, or that he was suffering from hallucinations, or that he was imagining a type of instrument never seen by himself or his customers. In short, a tentative suggestion may be made—with due deference and hesitation: scholars, including those whom in this particular matter Dr West would, it seems, classify as innocents, ‘can seriously argue’ that seven-stringed lyres were re-introduced to Greece or ‘came in’ well within the first half of the seventh century B.C.

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¹ See also J. N. Coldstream, *Greek Geometric Pottery* (London, 1968) 297; cf. (for a possible connexion with Terpander) G. M. A. Hanfmann, *HSCP* lxi (1953) 16 and Renate Tölle, *Frühgriechische Reigentänze* (Waldsassen 1964) 71–72. Mr Coldstream has kindly drawn my attention to another representation of a seven-stringed lyre on a Subgeometric vase—from Pitane: see E. Akurgal, *Orient und Okzident* (Baden-Baden, 1966) 202.

The Bowshot and Marathon

In a searching analysis of ‘The Campaign and the Battle of Marathon’ (*JHS* lxxxviii [1968] 13–57) Professor N. G. L. Hammond has paid me the compliment of mentioning my discussion of the range of the ancient bow (17 n. 27). The evidence had suggested to me that the bowshot was ‘at least 160–175 metres, but not as far as 350–450 metres’. These results, in Hammond’s words, fail to

‘take into account the nature of the target. For instance his lower figure is based on the firing of incendiary arrows (his T₁ = Hdt. viii 52.1), which needed no power of penetration, and the higher figure is based on unarmoured horses at that distance being out of range (his T₂ = Hdt. ix 22–23), which is almost equivalent to the extreme range

because a horse is easily stung into action by an arrow.’

The near equivalence of ‘out of range’ and ‘within extreme range’ may raise an eyebrow; but let it pass. On the essential point we agree: in Herodotus ix 22–23, two stades is beyond effective bowshot.

So far as the *terminus a quo* is concerned, the Persian fire arrows shot from the Areopagus must have had some power of penetration; for they were useless unless they stuck to the wooden wall. Moreover, the target was twenty-eight metres higher than the launching-point; if the line of flight were projected downwards to the level of the archers, the cast would have been greater. Again, Herodotus says that the Persians wound hemp around their arrows. Hollow heads for incendiary arrows (*JSA-A* iii [1960] 22–24) were apparently a later invention; at any rate piles from this assault on the Acropolis are all typical Iranian war-heads (*Hesperia* ii [1933] 341–342; iv [1935] 114–117). The tinder binding—bulky enough to keep a spark through the trajectory, and then to kindle the barricade—would interfere with the smooth flow of air past the shaft and curtail the range. It follows that, if a fire arrow from the Areopagus could reach the Acropolis 155 metres away, a war arrow from the same bow would carry even further. There are uncertainties, admittedly, but it seems unwise to jettison the testimony of Herodotus viii 52.1 on these grounds.

Another expedient might dispose of this evidence. Herodotus states that the Persians, *ἰζόμενοι* on the Areopagus, besieged the Acropolis. But (‘of course,’ in refuter’s parlance) *ἰζεσθαι* means ‘to encamp,’ ‘to use as headquarters and observation post’; one may *ἰζεσθαι* in one place, and be active elsewhere; see for example Herodotus iv 203.2, viii 71.2. Moreover, a convenient parallel presents itself. At the siege of Corinth in 1205, the Frankish counterfort of Mont Escovée held ‘de bons arbalestiers’ (Longnon, *Chronique de Morée*, paragraph 192). They were 1200 metres away from the citadel, far beyond crossbow range; to employ their weapons they will have left their fastness and approached nearer. In like manner at the siege of the Acropolis the barbarian archers will have crept up to fire the barricade from a closer, but unspecified, distance.

The explanation is neat; the chief objection is the very location of the Areopagus. It seems designed by nature to serve as the emplacement for artillery against the Acropolis, particularly if the defenders lack the means of reply (the canonical references here are Aesch. *Eum.* 688 and Ulrich Köhler, *Hermes* vi [1871] 105).

Professor Hammond concludes:

‘McLeod’s suggestion that the Greeks at Marathon were under fire for 200 or even 300 yards (p. 13) is an exaggeration.’

The Persians, he says, will have held their fire until the Greeks were well within bowshot; until, in fact, they ‘came *within* a range at which an arrow could

penetrate armour'. In this he may well be right; but if so, the distance is beyond recovery, except by intuition.

Actually Hammond does venture his own estimate; he settles upon 150 metres as 'a reasonable compromise' between Vegetius' prescription of 600 feet (= 178 metres), and Kromayer's figure of 100 metres. The former, according to Hammond, is 'the only piece of ancient evidence which concerns archery in battle'. What of the latter? Its origin is worth lingering over. Delbrück had addressed himself to the problem (*Geschichte der Kriegskunst* i³ 60 and n. 1), collecting references to sundry modern African bowshots ('far beyond 200 metres,' '120 metres,' and '150–180 paces'), to two ancient ones (Mithridates, one stade; Anaxagoras, 282 fathoms), and to two modern pronouncements ('600 feet,' '400 paces'), and commenting on the superiority of the Asiatic bow to the African wooden bow. This evidence, by some inscrutable mathematical operation, had led him to '100–150' paces as the effective range of the Persian bow. (Hammond, no doubt incredulous at such cavalier use of the evidence, converts this into 'more than 100 metres.')

When Johannes Kromayer raised the same question (*Abh. d. Sächs. Akad.* [Phil.-Hist.] xxxiv 5 [1921] 10 and n. 2) he contented himself with citing Delbrück, selecting two of his *testimonia* (120 metres for the moderns, Mithridates for the ancients). By offering a substantial discount, he postulated 100 metres as the extreme effective Persian range. This is the authoritative figure which Hammond uses to dilute 'the only piece of ancient evidence.'

Professor Hammond has ample precedent for setting the Persian range at any arbitrary figure he chooses; or he is at liberty to picture Datis, like the rebel leader at Bunker Hill, commanding his troops, 'Don't shoot until you see the whites of their eyes'. But in either event, he should not treat the ancient evidence for the bowshot as if it were relevant to his discussion.

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Anaximander and Dr Dicks

I am sorry to have annoyed Dr Dicks by criticising two articles of his in one of my footnotes (D. R. Dicks, 'On Anaximander's figures', *JHS* lxxxix [1969] 120: the offending footnote is in *JHS* lxxxviii [1968] 120 n. 44, referring to Dicks, *CQ* n.s. ix [1959] 294–309, especially 299 and 301, and *JHS* lxxxvi [1966] 26–40, especially 30 and 36). I limit myself to the four specific points raised, in the hope that Dr Dicks may one day be kind enough to substantiate his more general criticisms.

Pseudo-Galen

Five separate doxographical sources attribute to Anaxagoras the statement that the sun is larger, or many times larger, than the Peloponnese. Galen, or

pseudo-Galen, notes that Anaxagoras' sun is larger than the earth. I suggested that this second formula, although it may not misrepresent the substance of Anaxagoras' theory, was 'probably in Galen simply a random error, arising from the fact that the preceding sentence, on Anaximander, twice makes a comparison of sun and earth' (*JHS* lxxxviii [1968] 124 n. 62). It is hard to know what motivates Dr Dicks to omit my reasoning and to stigmatise my conclusion as 'curious' and 'eccentric'.

Tannery

Tannery offered three pairs of figures for the distances of the inner and outer diameters of the wheels of stars, moon and sun in Anaximander's universe: 9 and 10, 18 and 19, 27 and 28 (*Science hellène*² 94–5). Of these, the figures 19, 27 and 28 are given in doxographical sources. The remaining figures, 9, 10 and 18, are conjectural. If one wishes to criticise Tannery's reconstruction, it makes little sense to isolate one half only of this series. It makes still less sense to isolate the half for which there is less evidence: 9, 18 and 27. But only by doing so is Dr Dicks able to justify the sentence which I quoted from him: 'only 27 in the series has any textual authority'.

I am sorry if the manner in which I quoted this sentence made it appear that Dr Dicks had never even heard of the other two figures which appear in the sources, 19 and 28. But Dr Dicks is wrong to criticise Tannery as though he had generated a *single* series of numbers from the *one* figure, 27, which would have been a very dubious procedure. Tannery produced a *double* series of numbers from the *three* figures, 19, 27 and 28. This is a very different argument, which has won the support of several scholars, and which has recently fallen into disfavour only as the result of a number of misunderstandings which I have tried to dispel in an article in the *Classical Quarterly* (n.s. xvii [1967] 423–32).

Simplicius

In these, and in other doxographical passages, statements are attributed to Anaximander about the sizes and distances of earth, stars, moon and sun. In Simplicius mention of *μεγέθη και ἀποστήματα* is restricted, albeit loosely, to *τὰ πλανώμενα*: that the restriction in the context is a loose one anyone may verify who cares to turn up the original passage (*de caelo* 470.29 ff = DK 12A19 in part). Because I suggest that Simplicius here may misrepresent Eudemus, whom Simplicius refers to at this point, Dr Dicks attributes to me the principle that 'Simplicius' words may be altered, excised, or transposed at will'. In fact, my interpretation of this passage in Simplicius is no different from that implied by Zeller in his great work (*Philosophie der Griechen*⁶ i 1, 298–301) and in part by Tannery (*Science hellène*² 91).

Theophrastus

Finally, Dr Dicks objects to my quotation of two