

pigs less familiar or less important to most Greek-speakers. I suspect, however, that the blurring of the distinctiveness of the word δέλφαξ was driven by a broader semantic change.

Homer had called a sheep ὄς and a pig ὄς. Various phonetic developments, however, combined to erase the distinction between the two words. The first two vowels of ὄς coalesced into a diphthong; by the classical period, ὄς had disappeared from Attic prose, replaced by the unambiguous πρόβατον. As time went on, the rough breathing dropped out of some dialects, and eventually all; the diphthong οἰ and the vowel υ became indistinguishable, so that the Byzantines called the υ by its now familiar name upsilon (υ ψιλόν) to distinguish it from its diphthongal homonym. These developments are hard to date precisely, but the last of them seems to have taken place by the second century of this era.²⁰ Once this happened, ὄς was no longer a suitable general term for a pig. Even though the word ὄς was not in use, it remained as a poetic term. Children still learned to read from Homer, and the term ὄς will have been inconvenient once the homonymy was complete.

Its place was taken by χοῖρος, as has long been recognized, and now for the first time the term χοῖρος designated a pig of any age rather than a suckling. Δέλφαξ, for its part, seems also to have ceased to carry the same implication of adolescence that it had once borne. Perhaps, as suggested above, it was foreign influence or a different life-style that had caused the change. Equally likely, however, is that it was only now that the change in χοῖρος caused the change in δέλφαξ: once the former was not necessarily young, the loss of the semantic contrast meant that the latter was not necessarily older. It was in this situation that the diminutive δελφάκιον, freed of its adolescent connotation, came to denote a piglet.

We can now follow the history of our words with more precision than we had previously offered. A δέλφαξ in the classical period was a pig neither newborn nor old; its diminutive form δελφάκιον carried the usual meanings of diminutives, but did not reduce it to a piglet. This distinction may have been without parallel in the native Egyptian speech, if its appearance as a Demotic loan-word is significant. Eventually the term δέλφαξ and its diminutive lost their force as being specifically adolescent pigs. This may have occurred early as a result of foreign influence or increased urbanization, or later because of the loss of the opposition to χοῖρος. It was thus either a cause or an effect of the change in δέλφαξ that when phonetic developments caused ὄς to drop from use and χοῖρος to take its place as the usual term for swine, the diminutive δελφάκιον finally came to mean what we once thought it had always meant, a suckling-pig.

The perceptive reader will note the significant variation of an apparently straightforward term over a relatively short period of linguistic time. I leave it to that perceptive reader to decide how sweeping will be his conclusion about the sandy foundations of our semantic speculations over the vaster ages.

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²⁰ W.S. Allen, *Vox Graeca*³ (Cambridge 1987) 53, 81 n. 51.

Fifth century chronology and the Coinage Decree*

The debate over the chronology of the history of Athens in the fifth century BC has entered a new phase recently with the publication by Mortimer Chambers and his colleagues of physical evidence that seems to confirm Harold Mattingly's view¹ that a crucial inscription bearing three-bar sigmas and tailed rhos (*IG* I³ 11) was cut during the archonship of Antiphon in 418/7, and not during that of Habron in 458/7 as was generally thought.² This development has not been greeted with universal approval, however, and A.S. Henry, for one, has been unwilling to accept what is by any standards a radical shift.³ His arguments have, though, been more than adequately countered by Chambers,⁴ and the judgement of Jacques Tréheux remains as true now as it did in 1991: 'La mesure des intervalles entre les lettres, la superposition des photographies multiples et, surtout, le bombardement du marbre par un rayon laser ont prouvé (les photographies en couleur A et B ne permettent pas d'en douter) qu'il fallait lire et rétablir 'ΑΥΤ]-ΙΦΘΝ (*a.* 418/7).'⁵ Many competent scholars have already been convinced, and 'waverers will surely have to come round in the end'.⁶

There is an important issue at stake here (and one that is not unconnected with further chronological shifts that might be made at an earlier period). The position has never been better put than by Russell Meiggs who, although he favoured the earlier, higher, chronology, knew very much what was involved:

The main evidence for the *history* of the Athenian Empire (as distinct from an analysis of its character in the period covered by Thucydides and Aristophanes) comes from a long series of inscriptions, the most important of which are not explicitly dated. From the literary evidence (if Plutarch is dismissed as

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¹ First expressed in his 'The growth of Athenian imperialism', *Historia* xii (1963) 257-73.

² M.H. Chambers, R. Gallucci, and P. Spanos, 'Athens' alliance with Egesta in the year of Antiphon', in I. Worthington (ed.), *Acta of the University of New England International Seminar on Greek and Latin Epigraphy* (Bonn, 1990) 38-63; also published in *ZPE* lxxxiii (1990) 38-63; M.H. Chambers, 'Photographic enhancement and a Greek inscription', *CJ* lxxxviii (1992/3) 25-31. For a survey of other readings, see G. Németh, 'Was sieht ein Epigraphiker?', *Acta Classica Univ. Scient. Debrecen.* xxvii (1991) 9-14.

³ A. Henry, 'Through a laser beam darkly: space age technology and the Egesta Decree (*IG* I³ 11)', *ZPE* xci (1992) 137-46.

⁴ M.H. Chambers, 'The archon's name in the Athens-Egesta alliance (*IG* I³ 11)', *ZPE* xcvi (1993) 171-4; *idem*, 'Reading illegible Greek inscriptions: Athens and Egesta', *Thetis, Mannheimer Beiträge zur klassischen Archäologie und Geschichte Griechenlands und Zyperns* i (1994) 49-52, pl. 5.

⁵ J. Tréheux, 'Bulletin épigraphique: Attique', *REG* civ (1991) 469.

⁶ H.B. Mattingly, 'Epigraphy and the Athenian empire', *Historia* xli (1992) 129.

unreliable) two views of the empire, each coherent, are tenable: (1) that strong imperialism developed only after the death of Pericles and is to be primarily associated with the rise of Cleon and his successors; (2) that the vital steps from Alliance to Empire were taken in the early forties. It is no exaggeration to say that the answer to these questions depends primarily on whether criteria based on letter forms (especially but not solely sigma), first formulated in the late nineteenth century, are still valid. A History of the Athenian Empire which ignored this question should have no authority.⁷

An important element in the debate has been the date of the Coinage, or (better) Standards, Decree which imposed the use of Athenian weights and measures on the tributary allies. One school has favoured c. 449 BC for this development,⁸ while another would see it as having occurred in the 420s,⁹ or even later (the decree seems to be alluded to at Aristophanes, *Birds* 1040 ff. [414 BC]). Recently, Mattingly has produced what would appear to be confirmation of a late date for this measure, in the form of the text of the Standards Decree found at Hamaxitus in the Troad.¹⁰ Since Hamaxitus did not become part of the Athenian empire until after the Mytilenean revolt in 427 (Thuc. 3.50.3), it is unlikely that the decree was promulgated before then.¹¹ Only the possibility that new members of the empire had to erect copies of the Decree on entry¹² stands in the way of a wholly watertight case for a late date. A point that Mattingly made to meet this possible objection repays further study.

One of the copies of the Standards Decree was found on Cos, and Mattingly notes that in the spring of 431 'the island paid only part of its tribute and the anomalous amount in Attic currency (3 T. 4,465 dr.) suggests at least partial payment in non-Attic silver'.¹³ If so, it is either the case that the Coans disregarded the terms of the Standards Decree, or that the Decree had not yet been passed. The likely sums involved will be discussed below, but they need to be seen against a wider background.

Anomalous weights occur quite frequently in the literary and epigraphic record relating to gold and silver vessels, and these can often be interpreted as the restate-

ment of an amount actually paid in non-Attic currency, struck on Persian standards. This is scarcely surprising given the immense size of the Persian Empire compared with that of the Athenian. Anomalous gold weights can regularly be interpreted in terms of darics, and silver in terms of *sigloi*. Evidence from hoards seems to show that silver *sigloi* might acceptably weigh between 5.40 and 5.67 grams. (*Sigloi* were in fact struck on two weight standards: an earlier one which ranged between c. 5.20 and 5.49 grams and a later, heavier standard of between c. 5.40 and 5.67 grams).¹⁴ Anomalous weights in the sources can often be read as, for want of a better term, 'round' weights in another standard. Thus, the fourth-century Demosthenic speech *Against Timotheus* refers to 'two *phialai* of Lycian workmanship' which were in dispute. The plaintiff's father persuaded an associate 'to accept the value of the *phialai*, as much as their weight amounted to, which was two hundred and thirty-seven drachmae';¹⁵ 237 drachmae equals 180 *sigloi* whose average weight is 5.66 grams. In the same speech, we hear of a loan for 'thirteen hundred and fifty-one drachmae and two obols';¹⁶ a sum which equals 1,025 *sigloi* at 5.67 grams (assuming in both cases a drachma of 4.30 grams).

Moreover, the weights of vessels dedicated in the Parthenon are given in Attic drachms in both 'round' and 'anomalous' figures.¹⁷ The latter may be easily read in terms of darics and *sigloi*. A set of seven *phialai* said to weigh 643 dr. 2 obols, for example, converts to 500 *sigloi* at 5.53 grams. Of the silver vessels whose complete weights are preserved, just over 20 kg were made to the Attic standard, and nearly 40 kg to the Persian.¹⁸ These were dedicated between 434/3 and 414/3 BC. We cannot know, however, where or when they were made, and so this evidence is of little direct relevance to the date of the Standards Decree.

Nor can we be certain when the objects were made that are mentioned in an inventory drawn up in 429/8 BC of silver items in the keeping of the treasurers of the Other Gods at Athens (*IG* i³ 383). Very few complete weights survive on this list, but among those that do are those of some large amounts of silver belonging to different Athenian cult-centres (Table 1), most of them 'anomalous'. While little can be done with the silver *phialai* of Hera or the silver of Dityllos,¹⁹ the figures for

⁷ R. Meiggs, 'The dating of fifth-century Attic inscriptions', *JHS* lxxxvi (1966) 98.

⁸ e.g. *ATL* ii. D 14; R. Meiggs and D.M. Lewis, *A selection of Greek historical inscriptions*, 2nd edn (Oxford 1988) No. 45.

⁹ M.N. Tod, review of *ATL* in *JHS* lxix (1949) 105; H.B. Mattingly, 'The Athenian Coinage Decree', *Historia* x (1961) 148-88; E. Erxleben, 'Das Münzgesetz des delisch-attischen Seebundes', *Archiv für Papyrusforschung* xix (1969) 91-139; xx (1970) 66-132; xxi (1971) 145-162.

¹⁰ E. Schwertheim, 'Ein Dekretfragment aus dem 5. Jh. v. Chr. aus Hamaxitus', *VI. Araştırma Sonuçları Toplantısı* (1988), 283-5.

¹¹ H.B. Mattingly, 'New light on the Athenian Standards Decree (*ATL* II, D 14)', *Klio* lxxv (1993) 99-102.

¹² Cf. D.M. Lewis, 'The Athenian Coinage Decree', in I. Carradice (ed.), *Coinage and administration in the Athenian and Persian empires* (The Ninth Oxford Symposium on Coinage and Monetary History: B.A.R. International Series 343) (Oxford 1987) 56.

¹³ Mattingly (n. 11) 102.

¹⁴ S.P. Noe 'Two hoards of Persian *sigloi*', *NM* cxxxvi (1956) 42; cf. A.S. Hemmy, 'The weight standards of ancient Greece and Persia', *Iraq* v (1938) 65-81. S. Karwiese, 'Zur Metrologie der persischen *Sigloi*', *Res Orientales* v (1993) 46-9 argues for an 'ideal weight' for the heavier *siglos* of 5.574 grams related to a gold daric of 8.3611 grams. While the underlying principle is sound, these figures may be on the low side: see M. Vickers, 'Metrological reflections: Attic, Hellenistic, Parthian and Sasanian gold and silver plate', *Studia Iranica* xxiv (1995) 169-70.

¹⁵ [Dem.] xlix.32.

¹⁶ [Dem.] xlix.6.

¹⁷ W.E. Thompson in *IG* i³ pp. 318, 331-2.

¹⁸ M. Vickers, 'Golden Greece: relative values, minae and temple inventories', *AJA* xciv (1990) 613-25; M. Vickers and D.W.J. Gill, *Artful crafts: ancient Greek silverware and pottery* (Oxford 1994).

¹⁹ Although Stefan Karwiese kindly points out that they may be the equivalents of 666.66 *sigloi* (at 5.55 grams) and 266.66 *sigloi* (at 5.58 grams) respectively.

Table 1: Objects in the Temple of the Other Gods at Athens

Line number/objects	Wt in Attic drachmas	Wt in grams	<i>Sigloi</i>	Weight of <i>sigloi</i>
65 silver <i>phialai</i> of Hera in Xypetos Dionysou	860 dr. 1 ob.			
68-71 4 <i>karchesia</i>	4395 dr. 1 ob	18899.27	3,333.33	5.67
72-3 silver of Ge Olympia	494 dr.	2124.20	375	5.66
74-5 silver of Theseus	4270 dr.	18361.00	3,250	5.65
76-7 silver of Datyllous	346 dr.			
78-9 Silver of Olympian Zeus	5931 dr.	25503.30	4,500	5.67
		(IG i ³ 383, 65-79)		

some of the other properties can easily be read in Persian terms. The four *karchesia* weighing one-third of ten thousand *sigloi* and the silver of Olympian Zeus weighing 4,500 *sigloi* are especially suggestive,²⁰ and in the present context the fact that they seem to come in at 5.67 grams to the *siglos* suggests that the silverware in question was probably new (in that it would appear not to have lost weight through wear). The silver of Ge Olympia weighing 375 *sigloi* and that of Theseus weighing 3,250 reinforce this picture. The objects could, of course, have been made some decades earlier, but the conjunction of so much silver (nearly 65 kg) in Athenian shrines apparently made on an alien standard suggests that the Standards Decree was not yet in force.²¹

There is an extraordinary congruence at the higher end of the bracket for the later *siglos* weight which should override any reservations arising from the fact that, given the tolerances involved with more worn coin, it is an easy matter to find 'round' *siglos* approximations for most 'odd' figures in the tribute lists. The *sigloi* postulated for the 4 *karchesia*, for the silver of Olympian Zeus, and for the 1,351 dr. 2 obols in the speech *Against Timotheus*, work out at 5.6698, 5.6674, and 5.6690 grams. Not only does this imply highly accurate systems of ascertaining weights at the period, but that 4.30 grams was the conventional weight of the drachma.²² The best physical evidence we have is in the form of an Achaemenid stone weight found at Persepolis in 1939. 'Slightly chipped', it weighs 9.95 kilos and is

inscribed '120 karsha' in Old Persian²³ and '20 mina' in Babylonian.²⁴ 9.95 kilos would produce 1800 units of 5.53 grams. A loss of 250 grams (or a quarter of one per cent) would give 1800 *sigloi* at 5.666. By contrast, the lower limit is much looser, but this is to be expected in that there would have been a good deal of variation in the amount of wear that coins received in use. There is contemporary evidence for this in Xenophon's formula of five Attic drachms for four *sigloi*,²⁵ which can only relate to worn coins, not new ones.

The possible use of the Persian standard in the anomalous figures in the Athenian tribute lists has already been invoked, but not perhaps to the extent that it should. S.K. Eddy saw evidence for the use of electrum coinage (which was not affected by the standards legislation) for payment of the tribute in figures divisible by 24,²⁶ but D.M. Lewis felt that many of the 'anomalous' figures, several of those divisible by 24 included, could be more easily read in terms of silver coinages. He did not publish his own calculations, finding that his arithmetic 'was getting fancier and fancier'.²⁷ There are undoubted snares along the way, generated in large part by the fact that, since both the Attic and Persian standard were ultimately derived from the Babylonian, there are inevitable correlations between the one and the other. Thus, for example, 1.5, 3 and 7.5 Attic talents would equal 7,000, 14,000 and 35,000 *sigloi* all at 5.53 grams. There is therefore a possibility of apparent relationships even when they may never have been present in the first place, and what follows should be treated with appropriate caution.

²⁰ M. Vickers, 'The metrology of gold and silver plate in classical Greece', *The Economics of Cult in the Ancient Greek World, Boreas* (Uppsala) xxi (1992) 53-72.

²¹ Vickers (n. 17); *idem*, 'Metrological reflections; the Georgian dimension', in the *Proceedings of the 7th Vani Symposium 1994* (forthcoming).

²² I am grateful to one of *JHS*'s anonymous referees for having noted this.

²³ R.G. Kent, *Old Persian* (New Haven 1950) 114, 157 (Wc).

²⁴ E.F. Schmidt, *The Treasury of Persepolis and other discoveries in the homeland of the Achaemenians* (OIC xxi [Chicago 1939]) 62-3, fig. 43.

²⁵ Xen. *Anab.* i.5.6.

²⁶ S.K. Eddy, 'Some irregular amounts of Athenian tribute', *AJP* xciv (1973) 47-70.

²⁷ Lewis (n. 12) 62.

Eddy only touched on the possibility of some tribute payments having been made in Persian silver. The examples he cites are of the dynast Sambactys who paid 6,400 dr. in 453, and of two Carian towns, Euromus and Casolaba, which paid annual tributes of 2,500 dr., the former between 449 and 439 and the latter between 453 and about 446. 'At 4.3 grams apiece', Eddy writes, '6,400 drachms weigh 27,520 grams. Reckoning an average siglus at 5.5 grams, this is the weight of exactly 5,004'.²⁸ He is probably correct in his assumption that Sambactys made his payment with 5,000 Persian *sigloi*—at 5.504 grams to the *siglos*. It is less likely, however, that the payments made by Euromus and Casolaba were made in this way, for the figure of 2,500 dr. or 25 *minae* is in any case a round figure.

Eddy believed in an early date for the Standards Decree, and this, coupled with his primary interest in payments in electrum coinage, perhaps caused him to overlook other possible payments in Persian silver coins. Mattingly quite properly drew attention to the payment made by Cos in 431 of 3 talents 4,465 dr., suggesting that it implied 'at least partial payment in non-Attic silver'. 4,465 dr. indeed makes for 3,500 *sigloi* at 5.49 grams, but the whole tribute payment as recorded happens to equal 17,500 *sigloi* at 5.52 grams—which may point to the whole amount having been paid in *sigloi*. There are other cases of the same kind. Abydus paid 5 T. 3,260 dr. in 429: the equivalent of 26,000 *sigloi* at 5.50 grams. In 444, Abydus had paid 4 T. 315 dr.: 19,000 *sigloi*, also at 5.50 grams. Their payment of 4 T. 2,260 dr. in 453 may have been made with 20,000 *sigloi* at 5.64 grams; if so, with less worn coin.²⁹

Cyzicus, whose coinage was of electrum, might well be expected to have paid its tribute in that metal. If this were the case, we might expect it to show in sums divisible by 24. While Cyzicus' tribute for 428 (8 T. 1,680 dr.) does make for 2,070 electrum staters (49,680 divided by 24), the 8 T. 3,500 dr. paid in 429 is not thus divisible; it does, however, produce 40,000 *sigloi* at 5.54 grams. Then, Byzantium's payments in 429 and 428 of 21 T. 4,740 dr. and 15 T. 90 dr. (neither divisible by 24) give 100,000 and 70,000 *sigloi* (at 5.62 and 5.53 grams respectively).³⁰ Such large 'round' figures as 40,000, 100,000 and 70,000 are especially significant in the present context.

This note has dealt with only a few of the suggestive figures in the Tribute Lists (and there may well be other explanations), but their consistency perhaps implies that on the whole payments were made in *sigloi* rather than a mixture of currencies. The pattern exists throughout the tribute lists, from the earliest entries, and may well reflect the Persian practice on which the Athenian was based. If the existence of anomalous figures in the later entries also reflects a historical reality in which large tribute payments were made in Persian coin in the late

430s and early 420s, they would go some way towards explaining why a Standards Decree was introduced a few years later, for it would certainly have been administratively more convenient to have payments made in a uniform coinage.³¹ In addition, to oust Persian coinage altogether from the cities of the Athenian empire would have made a loud symbolic statement about the New World Order. One might guess that this occurred at the time of the major, and harsh, re-assessment of 425/4.³²

Do these considerations simply reinforce the case consistently argued by Mattingly that 'strong imperialism developed only after the death of Pericles and is to be primarily associated with the rise of Cleon and his successors', or are matters more complex? Clearly, the 'law' that three-barred sigma disappeared from public inscriptions after 446 BC should now go out of the window, and dating by letter forms (or 'intuitive decadology') with it, but the fact that a three-barred sigma might occur after 420 does not necessarily mean that other examples are commensurately late. Each document will have to be examined in its own context. Much the same holds good with the non-inscribed material culture of Athens. The 'shift akin to a landslide'³³ on the epigraphic front should have implications for the chronology of pottery, sculpture and other arts currently based on the views of the late E. Langlotz,³⁴ but there is no predicting where things will end up.

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²⁸ Eddy (n. 19) 54.

²⁹ The tribute figures are most conveniently given in R. Meiggs, *The Athenian empire* (Oxford 1972) 538-61.

³⁰ By contrast, the 'anomalous' (H.B. Mattingly, 'The Athenian Coinage Decree and the assertion of empire', in Carradice [n. 12] 65) tribute payments made by Thracian Berge in 451, 446 and 434-31 may well have been made in Cyzicene staters, for 2880, 3240 and 3120 dr. are all divisible by 24, and produce 120, 135 and 130 staters respectively.

³¹ Cf. Lewis (n. 12) 62.

³² On which see M. Ostwald, *From popular sovereignty to the sovereignty of law: law, society and politics in fifth-century Athens* (Berkeley and Los Angeles 1986) 293; M. Vickers, *Pericles on stage: political comedy in Aristophanes' earlier plays* (Austin, Tx. 1995).

³³ Chambers (n. 4) 52.

³⁴ E. Langlotz, *Zur Zeitbestimmung der strengrotfigurigen Vasenmalerei und der gleichzeitigen Plastik* (Leipzig, 1920), based in turn on the work of Ludwig Ross and Franz Studniczka: see E.D. Francis, *Image and idea in fifth century Greece: art and literature after the Persian wars* (London, 1990) 107-111.