Zu Finanzpolitik und Münzprägung des Dionysios von Syrakus

On the Financial Policy and Coinage of Dionysios of Syracuse

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(Tafel 38-39)

SOURCES

Dionysius I of Syracuse had little luck with the history of his fame in posterity. He did not make it easy for himself either. As a personality two generations ahead of his time, he already found little understanding among his contemporaries. The historical work of Philistus of Syracuse (ca. 430-356 BC),[1] which would have belonged here for a long time, has unfortunately come down to us only fragmentarily. Only occasionally does its quality shine through to us, as in Diodorus' (14. 18. 47 ff.) description of the wall construction in Syracuse and of the conquest of Motya (397 BC). Timaios of Tauromenion (ca. 350-ca. 255 BC)[2] used the Dionysius books of Philistus for his *Historiai*, in which he rhetorically elaborated the relevant passages and attempted to achieve a dramatic tendency, as numerous anecdotes about Dionysius reflect. The work of Timaios is just as lost as that of Philistus, although considerably more fragments are demonstrable from it than from the latter. So we remain for a coherent account of Dionysius dependent on the relevant books of the world-historical *Bibliothek* of Diodorus Siculus[3] mentioned, which he compiled in the time of Caesar. Since Diodor leads his sources (Timaios, but also Ephoros) quite uncritically and compiled them expertly, his work can hardly be better than those; quite the contrary, where he adds additional inaccuracies. All other reports about Dionysius are individual notices. Some stand out, such as those in the 7th and 8th Platonic Letters, the rest stems mostly from much later sources, later sources, is characterized according to the scheme of the tyrant-books and transmitted by anecdotal tradition.

*Unforgettable to me is a conversation about the topic with L. Mildenberg at Monticello in September 1973. Manifold stimulation I received through the lectures that were held at the VI Convegno del Centro Internazionale di Studi Numismatici in Naples 1977, and above all from numerous discussions with T. Hackens and R. R. Holloway. Further indications contributed E. Cammarata, H.-J. Gehrke, and A. Koch, the illustration material H. Küthmann (München), M. Price (London) and H.-D. Schultz. The photos prepared C. Loose. To thank them all is my pleasant duty.

[1] *FGrHist* 556. R. Lauffano, "Ricerche su Filisto," *Kokalos* 3 (1957), p. 98-122.

[2] *FGrHist* 566 mit Add.

[3] Ed. F. Vogel and C. T. Fischer (Leipzig, 1888-1906) (Books 1-20). K. Meister, *Die sizilische Geschichte bei Diodor von den Anfängen bis zum Tod des Agathokles, Quellenuntersuchungen zu Buch I V-XXI* (Diss. München, 1967), p. 70-118.

No wonder that modern historiography[4] finds it difficult to do justice to Dionysius. Fascination with the deeds of the outstanding personality and condemnation of the unscrupulous power-holder stand fundamentally opposed to each other as in antiquity. But different from then, today the sum of primary information is small. Our judgment therefore depends on whether we are able to examine the desert of transmitted statements for their original content and to evaluate them correctly in a larger context. This shall be done in the following for an important aspect of the financial policy of Dionysius, for his coinage.

It has never been questioned that it was the historical merit of Dionysius to have averted the danger of complete subjugation of the Sikeliotes under the political will of Carthage.[5] None of the sikeliotik republics would have been capable of this on their own, Syracuse included: Too great was the superiority of Carthage's economic means of power, too great also the superiority of its battle-tested soldier troops over the urban citizen militias.

EXPENDITURES AND REVENUES

In order to be able to confront Carthage with the prospect of success, it required exemplary preparations. I want to recapitulate them briefly:[6] extensive fortifications of Syracuse, both on the island Ortygia as well as on the plateau of Epipolai; the construction of a war fleet of 300 ships, among them a number of the newly developed penters, as well as the associated shipyards; an immense number of equipment for heavy and light armed forces; a potential of war machines of all kinds, including the newly developed catapults. War efforts of such scope naturally cost corresponding sums. Added to this came the personnel costs for the engineers and craftsmen whom Dionysius had gathered from the entire world for the construction of the machine park, for the manning of the fleet and above all for the mercenaries who stood available in large numbers after the end of the Peloponnesian War.

Later, after the end of the great Carthaginian war in the year 392, followed a generous expansion of Syracuse, which had grown so extensively, with public buildings, broad streets and magnificent temples. Also many of the places destroyed by the Carthaginians had to be newly built up. Not small are furthermore the running expenditures of Dionysius for the security of his realm—according to Diodorus (16. 5.4; 9.1) the mightiest of that time in Europe—and of his tyranny to be estimated: Maintenance of a standing mercenary army, the fleet and the fortified residence on Ortygia, bodyguards, gifts to followers, bribes, a representative court—whereby the honor of Dionysius is confirmed by all ancient authors, that he personally lived modestly.

The need for monetary means was therefore extraordinarily high in the military monarchy of Dionysius and went far beyond that of the republic in the preceding decades, apart from their

[4]Fundamental: K. F. Stroheker, *Dionysios I.—Gestalt und Geschichte des Tyrannen von Syrakus* (Wiesbaden, 1958); H. Berve, *Die Tyrannis bei den Griechen* (München, 1967). Further: A. Holm, *Geschichte Siziliens im Altertum* 2 (Leipzig, 1874), p. 92 ff.; E. A. Freeman, *History of Sicily* 3 (Oxford, 1892), p. 444 ff. and 4 (1894), p. 1 ff.; *RE* 5, s.v. "Dionysios" (Niese), p. 882 ff.; K. J. Beloch, *Griechische Geschichte*, 2. ed., Bd. 2 Abt. 1 (Berlin/Leipzig, 1927), p. 408-13; Bd. 3, Abt. 1 (1922), p. 49 ff. and 110 ff.; Bd. 3, Abt. 2 (1923), p. 185 ff.; E. Ciaceri, *Storia della Magna Grecia* 2 (Mailand/Rom/Neapel, 1927), p. 401-34; *CAH* 6, p. 108 ff. (Bury); H. Bengtson, *Griechische Geschichte*, 5. ed. (München, 1977), p. 286-91; K. F. Stroheker, "Sizilien und die Magna Grecia zur Zeit der Beiden Dionysii," *Kokalos* 14-15 (1968-69), p. 119-34.

[5]So already Plat. *Ep.* 8.353 A-B.

[6]Compiled in Stroheker (cf. above, note 4), p. 62 ff.; Freeman 4 (cf. above, note 4), p. 61 ff.; and 230 ff. (A. Evans, "The Finance and Coinage of the Elder Dionysius"); J. G. Droysen, *Zum Finanzwesen des Dionysios von Syrakus*, SBBerl 1882 = Kleine Schriften 2, p. 306-20.



emergency situation during the defense against the Athenian siege 415-413 BC (costs over 2000 talents, Thuc. 7.48.5). But how did Dionysius procure the necessary sums, undoubtedly with approval through the formally continuing popular assembly?[7]

The ancient sources give some, though not comprehensive information on this.[8] First, the property owners had to pay a running tax at a moderate level, as we can infer, to which also belonged a cattle tax. In addition, the old municipal duties such as customs and harvest tithes ran, which probably remained with the polis. In case of war, Dionysius repeatedly raised one-time εἰσφοραί for military purposes, which could be very high—according to a statement by Aristotle (*Pol.* 5.9.5 = 1313b 26 ff.) so high that the citizens in five years had their entire fortune taken away. It has long been recognized that this notice, as it is transmitted, cannot correspond to the truth. Dionysius would hardly have been so simple-minded to slaughter the cow he wanted to milk. On the other hand, levies of 20 percent of movable property within a year are conceivable in emergency situations such as those of the Carthaginian wars, and I could imagine that the sums of the five highest-taxed individual years during the entire 38-year period of rule, when added up, had reached the level transmitted by Aristotle. All these εἰσφοραί could Dionysius demand in his capacity as strategos autocrator of Syracuse with the approval of the popular assembly. Likewise he repeatedly took the treasures of the Syracusan sanctuaries as forced loans, despite inferior coinages, whose payment he assured as soon as the coinages were of full value. In times of need such measures could certainly be legitimately implemented within the framework of legality. On another page it then stands that Dionysius obviously understood how to create permanent conditions from provisionally formed provisions, and that he often only reached the demanded money by using cunning and sometimes also applying pressure.

Besides the revenues from the taxation of the polis citizens stood others, which came about through the special policy of the tyrant, for example from the confiscation of the property of those killed or driven into exile, but above all booty from wars and military campaigns. Among these count tributes from subjugated Sikeliot and sub-Italian cities, ransoms for war prisoners, booty and landed property from Naxos and Katane as well as the sums from the sale of at least part of their population into slavery, the booty from the plundering of Motya and the ransoms for its inhabitants, allegedly 300 talents from Himilkon for free withdrawal with the Carthaginian citizen troops 396 BC from Syracuse, plundering of Rhegion and sale of its inhabitants, plundering of the temples of Agylla/Caere and of Kroton, and certainly many other opportunities for profit of which we know nothing.

Whether these sums flowed into the Syracusan state treasury or into the private coffers of Dionysius obviously depended on whether the polis was involved in the respective action with its citizen levy or by its hired mercenary troops, or whether the tyrant had acted on his own initiative with his own soldiers. As concerns the expenditures, those from the private coffers were undoubtedly defrayed, which were specifically conditioned by the position of power of the ἄρχων Σικελίας—as his title on inscriptions[9] reads. Between the private coffers and the treasury of the polis we can, however, in many cases distinguish clearly neither in the revenues nor in the expenditures, but only register the probable weighting.

Budget and need were thus so great in Syracuse under Dionysius as they had not been for two generations, since the Deinomenids. The unprejudiced observer will now expect that the increased turnover must also be reflected in an increased output of minted coins. If one looks, however,

[7] On the constitutional position of Dionysius, see Stroheker (cf. above, note 4), p. 147 ff.; Berve (cf. above, note 4), p. 236 ff. and 644 f.

[8] See Stroheker (cf. above, note 4), p. 162 ff.; Berve (cf. above, note 4), p. 239 ff.

[9] *SIG*³ nos. 128 Z.6 f.; 159 Z.19 f.; 163 Z.8.



into the authoritative literature until a few years ago,[10] the picture is quite different. There one finds an extraordinarily intensive minting in the decade after 413 BC and again in the epoch of Timoleon almost nothing during the reign of the elder Dionysius. Only in recent times has this picture begun to change.[11] The reflection is made more difficult by the fact that Dionysius, like all pre-Hellenistic tyrants, did not mint in his own name, but only in that of the polis Syracuse.

Let us consider first the silver coinage of the epoch of the signing artists, which undoubtedly began before Dionysius, but did not end with his accession to power. Apart from small change, three denominations are minted: drachmas, tetradrachms and dekadrachms, the famous medallions.

DEKADRACHMS

The dekadrachms are, as is known, divided into two types, each of which we see connected with a famous artist, with Kimon and Euainetos (Tafel 38, 1-2).[12] The type of Kimon is the older, that of Euainetos the younger. A chronological arrangement seems, however, to have been issued for both simultaneously, as if they should compete with each other. The beginning of dekadrachm minting was assumed in the year 412 in the wake of a study published by A. Evans[13] in 1891, indeed one has even tried to push it still further back. A large part of all dekadrachms was thus dated before the accession to power of Dionysius. G. K. Jenkins[14] and C. M. Kraay[15] were the first to point out that the analysis of treasure finds gives a different picture. Most recently, the reconstruction of the Naro find from 1925 by L. Mildenberg[16] led to the same conclusion: In it the dekadrachms of the Euainetos type show fewer traces of circulation wear than those of the Kimon type, both together however fewer than the two dekadrachms of Akragas which the find also contained. A further indication for the absolute dating is provided by the treasure find from Ognina 1923, which very probably was buried shortly before 402 BC.[17] Although it is a mixed find and contains tetra- as well as didrachms, dekadrachms are missing from it. These were therefore at the time of its burial at least still rare. If the Syracusan "medallions" began at all before Dionysius, then only very shortly before with rare specimens from few dies. How long the younger type of them, that of Euainetos, continued to be minted is not yet clearly demonstrable. Much speaks for the fact that it lasted at least until around 370 BC—Dionysius I dies in the year 367.

[10] See among others G. F. Hill, *Coins of Ancient Sicily* (Westminster, 1903), p. 97 ff.; C. Seltman, *Greek Coins*, 2. ed. (London, 1955), p. 125 ff.; P. R. Franke and M. Hirmer, *Die Griechische Münze* (München, 1964), p. 49 ff.; Stroheker (cf. above, note 4), p. 246 ff. note 145; see also the titles mentioned in note 6 above.

[11] See below, notes 12 and 13.

[12] A. Gallatin, *Syracusan Decadrachms of the Euainetos Type* (Cambridge, Mass., 1930); J. H. Jongkees, *The Kimonian Dekadrachms* (Utrecht, 1941); M. R. Alföldi, *Dekadrachmon—Ein forschungsgeschichtliches Phänomen*, SB der Wissenschaftlichen Gesellschaft der J. W. Goethe-Universität Frankfurt am Main 13, Nr. 4 (Wiesbaden, 1976), p. 117 ff.

[13] A. Evans, "Syracusan 'Medallions' and Their Engravers," *NC* 1891, p. 205-375; concerns about the correctness of this dating already by A. C. Headlam, "Some Notes on Sicilian Coins," *NC* 1908, p. 4-9. Extremely early (after 424) dates the dekadrachms J. Liegle, "Euainetos," *BWPr* 101 (1941), p. 30-32.

[14] G. K. Jenkins, "Dionysios I of Syracuse and His Coinage," *London University Institute of Classical Studies Bulletin* 8 (London, 1961), p. 86; *Ancient Greek Coins* (New York, 1972), p. 175 f.

[15] C. M. Kraay and M. Hirmer, *Greek Coins* (London, 1966), p. 288 f.; C. M. Kraay, *Archaic and Classical Greek Coins* (London, 1976), p. 233 f.

[16] *IGCH* 2118; I owe this notice to the liberal assistance of L. Mildenberg. See also the hoards listed in the *IGCH* under the following numbers.

[17] *IGCH* 2120. Individual evidence in *SNR* 58 (1978) (in press).



TETRADRACHMS

The tetradrachms of the period of signing artists[18] are obviously not minted in a single sequence, in which die followed upon die, but in two parallel series with certain displacements. R. R. Holloway recently pointed out this fact[19] and established that one series is characterized by symbols of marine life (two dolphins, fish and dolphin, mussel, Skylla), the other by an ear of grain. The chief master of the later dolphin series is again Euainetos, of the grain series Kimon (Tafel 38, 3-4).

The dating for the tetradrachms has also been corrected downward in recent years, most recently by L. Mildenberg,[20] who has underlined that the Arethusa of Kimon (Tafel 38, 4) must have originated around or shortly before 405, hardly already 409 or even earlier. This downward dating is also confirmed by the treasure from Ognina. With this we gain a fixed point for one series of the signed tetradrachms, which shows us that their minting must have come to an end soon after the turn of the century. Their function is obviously taken over by the dekadrachms minted in masses and occasionally imported Corinthian staters and Athenian tetradrachms,[21] finally also by gold coins, to which I will return immediately. I have the impression that this change in minting policy must stand in a certain connection with the great Carthaginian war (397-392 BC) and its effects.

DRACHMS AND SMALL SILVER

Drachms of Attic standard have always been minted only rarely in Sicily. All the more striking is that they become more frequent in the epoch of the signing artists, particularly in Katane[22] and in Syracuse. It seems to me that we must see in this phenomenon an indication for their dating: They belong to the last decade of the 5th century, their advance reflects the changed situation after the Carthaginian storms of the years 409 and 406/405. The Syracusan drachms with the image of the Sikanian hero Leukaspis are divided like the tetradrachms into two series, one of which belongs

[18]L. O. T. Tudeer, "Die Tetradrachmenprägung von Syrakus in der Periode der signierenden Künstler," *ZfN* 30 (1913), p. 1-292. On the problem see the research summary by K. Christ, "Zur Chronologie der syrakusanischen Münzprägung des 4. Jahrhunderts v. Chr.," *JNG* 1957, p. 22-24.

[19]R. R. Holloway, "La struttura delle emissioni di Siracusa nel periodo dei 'signierende Künstler,"' *AIIN* 21-22 (1974-75), p. 41-52. See also G. K. Jenkins, *The Coinage of Gela* (Berlin, 1970), p. 93 ff. The die-cutter IM (Tudeer [cf. above, note 18], Nr. 67, V 24 R 45) must belong to the marine-workshop, cf. R. R. Holloway in *Atti del VI Convegno del Centro Internazionale di Studi Numismatici, Napoli 1977* (in press) as well as below, note 45. Two dolphins also appear in the section of the biga-side of the contemporary tetradrachms of Messana, see G. E. Rizzo, *Monete greche della Sicilia* (Rom, 1946; hereafter Rizzo), Taf. 26; A. C. Headlam (cf. above, note 13), p. 6 f.

[20]L. Mildenberg, "Kimon in the Manner of Segesta," *Actes du 8ème Congrès International de Numismatique. New York-Washington, septembre 1973* (Paris/Basel, 1976), p. 114-21; see also C. M. Kraay (above, note 15), p. 224. The technical literature by Evans had already dated similarly, see B. V. Head, "History of the Coinage of Syracuse," *NC* 1874, p. 18-22.

[21]Siculo-Punic tetradrachms also flow in. The import begins with individual pieces in the early 4th century, becoming an avalanche as far as Corinth is concerned—in Timoleonic time, see G. K. Jenkins, "A Note on Corinthian Coins in the West," *ANSCent*, p. 367-79; C. M. Kraay, "Timoleon and Corinthian Coinage in Sicily," *Actes du 8ème Congrès International de Numismatique. New York-Washington, septembre 1973* (Paris/Basel, 1976), p. 99-105; *La circolazione della moneta ateniese in Sicilia e in Magna Grecia. Atti del I Convegno del Centro Internazionale di Studi Numismatici, Napoli 5-8 aprile 1967*, AIIN 12-14 Suppl. (1969).

[22]Katane: Rizzo, Taf. 14, 7-8, 12, 14-15; see also Kamarina: Rizzo, p. 214, D-E as well as Taf. 7, 10 11; Messana: Rizzo, Taf. 27, 8 and 11; Selinus: Rizzo, Taf. 31, 12.



to the "marine workshop,"[23] the other to the "grain workshop" (Tafel 38, 5-6).[24] None of them seems to reach into the 4th century. The emissions of small silver—hemidrachms, litrai, hemilitrai and tetrans—also find their end at the latest at the same time as the tetradrachms, thus shortly after 400, rather however already around 400.

THE GOLD COINAGE

Gold was minted in the 5th century in Sicily[25] as in Greece only in times of emergency. When it happened, then probably always in a weight that was related to silver nominals in silver with consideration of the value relationship of gold to silver. Akragas, Gela and Kamarina minted gold in the last moment of their state existence, before they fell in the Carthaginian storm of 406-405 BC. In the same context belong without doubt also the gold emissions of the same weight standard from Syracuse, but not in the years of the Athenian expedition (415-413), as is often supposed.

TABLE (see TAFEL 38)

Sicilian Gold Emissions of the late 5th and early 4th centuries BC

AKRAGAS	GELA	KAM.	SYR.	VALUE IN AU-LITRAI	REL. AU:AG	EQUIV. IN AG-DRACH.	EQUIV. IN SILVER
1.34 gm.			1.34 gm.	1.54	1:13	4	17.42 gm.
			0.67 gm.	0.76	1:13	2	8.71 gm.
			(0.30 gm.)	(0.345)	(1:13)	(1)	(= 3.90 gm.)
			(3.48 gm.)	(4)		(later: 12)	
1.74 gm.	1.74 gm.		1.74 gm.	2		(later: 6)	
	0.87 gm.			1		(later: 3)	
	1.16 gm.	1.16 gm.	1.16 gm.	1.3	1:15	4	17.40 gm.
			0.58 gm.	0.6	1:15	2	8.70 gm.
			5.82 gm.	6.6	1:15	20	87.30 gm.
			2.91 gm.	3.3	1:15	10	43.65 gm.

The development of gold coinage in the four cities can be made clear to us by a table. At the

[23]Rizzo, Taf. 42, 9-10; H. R. Baldus, "Das Œuvre des Stempelschneiders Eumenos von Syrakus im Lichte der frühen Leukaspisdrachmen," *Chiron* 2 (1972), p. 37-55; E. J. P. Raven, "The Leukaspis Type at Syracuse," *Congrès International de Numismatique Paris 1953, Actes* (Paris, 1957), p. 77-81.

[24]Rizzo, p. 214, A-C as well as Taf. 47, 1-2 and 5-6.

[25]That the electron coins with Apollo head/tripod, which K. Christ (cf. above, note 15), p. 24-27 recently claimed for Dionysius II, were first minted under Agathokles, has been proven by G. K. Jenkins, "Electrum Coinage at Syracuse," **Essays in Greek Coinage Presented to Stanley Robinson**, eds. C. M. Kraay and G. K. Jenkins (Oxford, 1968), p. 145-62.

From the time before the gold coins discussed in the following exists only the "Messenion d'oro" of the Pennisi collection (1.46 gm. = 1.6 litrai), assuming a value relation of gold: silver = 1:12 equal to a tetradrachmon, see S. Pennisi di Floristella, **La Messenion d'oro** (Messina, 1927); E. Boehringer, "Salvatore Pennisi Barone di Floristella † 26. Juni 1931," **ZfN** 42 (1933-35), Taf. 9, 4.



beginning stands in Akragas (Tafel 38, A-B)[26] and Syracuse (Tafel 38, 8-10)[27] a nominal of 1.34 gm., in Syracuse also the half piece of 0.67 gm. and the quarter, preserved in a single specimen with 0.30 gm. weight. The value relationship to silver amounted with this series obviously 1:13, it concerns tetradrachms, didrachms and drachms in gold.[28] When shortly thereafter the gold price rose, dilitrai in gold were issued in a second series, 1.74 gm. heavy. The minting places of this nominal are Akragas, Gela and Syracuse (Tafel 38, C-E, 11-12).[29] In Gela there is additionally the litra with 0.87 gm., in Syracuse apparently also the tetralitron with 3.48 gm. weight. The occasion for the emission seems to be the following: When it was no longer possible, because of the uncertainty of the gold price, to remain within the framework of the accustomed silver nominals, at least the weights should be unambiguous. When then the gold price had stabilized at the higher level of 1:15, the pieces 6, 3 and 12 Attic silver drachms were worth. Now one could also proceed again to mint the accustomed tetradrachms in gold, weight 1.16 gm. This standard exists in Gela, Kamarina and Syracuse (Tafel 38, F-G, 13-14),[30] there also the didrachm with 0.58 gm. Akragas is missing. I would therefore like to place the introduction of the last-mentioned third series in the early year 405, shortly after the fall of Akragas. This is the year of the rise of Dionysius to sole ruler. Only the last of the nominals discussed so far can therefore be connected with his name. How long it was minted must remain open for now—in my opinion just as long as the series of tetradrachms.

The next large gold emission is a purely Syracusan affair,[31] all other minting places are missing. The gold value continues to stand 1:15 to silver. But now exclusively large nominals of 2.91 gm. weight are minted, whose value corresponds to the dekadrachm in silver, as well as of 5.82 gm. = 20 silver drachms, which does not exist at all as an individual nominal in silver (Tafel 38, 15-17). We encounter with gold therefore the same phenomenon as with silver, that the old values tetradrachm and didrachm are abandoned and only the large nominals are continued, indeed these are even increased by an oversized piece. With both gold nominals we find again the signatures of Kimon (as well as A and AK) and Euainetos (Tafel 38, 15-16),[32] but both here use the same head

[26]Rizzo, Taf. 3, A-B. W. Giesecke, *Sicilia Numismatica* (Leipzig, 1923; hereafter Giesecke, *SN*), Taf. 6,7. With a value relationship of gold:silver = 1:13 it concerns tetradrachms. The two value pellets that can be seen on many of these gold pieces and about whose meaning much has been speculated require an explanation, G. K. Jenkins (cf. above, note 19), p. 98 f.

The specimens illustrated here (Tafel 38, A-B), both formerly in the de Ciccio collection (Naples), stem from the same obverse die. The pellets are therefore subsequently engraved. As occasion for this I can only imagine a change in value during the coinage: Either a necessary doubling of the value of the coin at the moment of siege by the Carthaginians, or rather a revaluation of the piece by two units—in this case probably by two litrai: If at a later point 1.16 g gold at 1:15 = one tetradrachm, then 1.34 g at 1:15 corresponds to a tetradrachm + three litrai. The value pellets could mark a stage on the way to the revaluation of gold.

[27]Rizzo, Taf. 48, 3 and 5-6; Giesecke, *SN*, Taf. 14, 1-3. That this series could not have been minted already 415-413 is shown by Rizzo on Taf. 51, 5-6: The die of the large gold nominal is cut by IM, who created his signed tetradrachm die around 405 (Tudeer [cf. above, note 18], R 45) (Tafel 38, 7).

[28]So exceptionally correctly Giesecke, *SN*, p. 49 f.

[29]Akragas: Paris, J. Babelon, *Catalogue de la Collection de Luynes* (Paris,1924), 846 and London, G. K. Jenkins, "Recent Acquisitions of Greek Coins by the British Museum," *NC* 1959, Taf. 5, 4.

Gela: Jenkins (cf. above, note 19), Nr. 490-91.

Syracuse: Hess-Leu 3, 27 März 1956, 210; The tetralitron Slg Pennisi, V: Gorgoneton on shield—surrounding ΣVPAKOΣION; R: Athlet with Strigilis, 3.475 gm. seems unpublished. A dilitron from Messana belongs to the fourth century, likewise Sammlung Pennisi: E. Boehringer (cf. above, note 25), Taf. 9, 10 (1.755 gm.).

[30]Gela: Jenkins (cf. above, note 19), Nr. 492-94. Kamarina: Rizzo, Taf. 7, 17; Giesecke, *SN*, Taf. 7, 5; G. K. Jenkins, "Some Camarinean Questions," *NNUM* 1967, p. 154-61.

[31]G. de Ciccio, *Gli aurei siracusani di Cimone e di Eveneto* (Rom 1957).

[32]Rizzo, p. 254, Fig. 72.

types, Arethusa on the hekatoliron, the river god Anapos on the pentekontalitron. As already with the dekadrachms, the impression forces itself that both masters stood in competition with each other for a time, almost as if there had been two workshops within the mint. Also with the large gold the correction of the conventional dates is owed to G. K. Jenkins and C. M. Kraay.[33] They pointed out that the analysis of the Avola find from 1888 clearly shows that the 100- and 50-litrai pieces must have been minted in the 4th century. The coin type of the Anapos head newly created for the pentekontalitrai points in the same direction: At the Anapos Dionysius achieved his great Carthaginian victory in 396 BC.

If we summarize, research of recent years has been able to show that precious metal coinage was not only continued fragmentarily into the reign of Dionysius, but was even increased and continued, as the historical sources also suggest. Unmistakable is thereby the tendency toward large nominals, toward 10- and 20-drachm units, while the old values are abandoned. Their place was taken to a modest extent by imported silver, but this alone was by no means sufficient to maintain that comprehensive financial economy which we must presuppose for Dionysius I according to the sources. An essential element seems to have been completely overlooked in its significance until now: the bronze coinage.

SMALL BRONZE NOMINALS

If one looks into the relevant catalogs and investigations, a remarkable picture presents itself. We find diverse emissions of bronze small values assigned to the last decades of the 5th century, whereby it remains more or less open whether the minting of the small coins also extends into the reign of Dionysius, and if so how long, or whether it ends already before. A second series above all of heavy bronzes, whose value is given differently, we see assigned to the time of Timoleon (344-336 BC). For both Dionysii there remains little in between, truly a terra incognita. Such a picture is naturally aroused by previous mistrust. The difficulties of finding a new approach lie in the Janus-faced nature of the problem: once in gaining clear criteria for the absolute datings, and then in determining the individual nominals precisely in their value, which depends on the dating and supports it in turn. We must be careful not to fall into any circular reasoning.

Starting from those coin types of the 5th century whose value can undoubtedly be determined thanks to the indication of value pellets.[34] The first bronze series of Syracuse, introduced around 420 BC (Tafel 39, 18-19), comprises the nominals Tetras and Onkia; the Hexas is missing, which apparently is never minted later either. This arrangement of nominals is typical for all minting places of eastern Sicily, which stand under the economic influence of the powerful Syracuse. The types of the Tetras are *Female head with hair band to right (Nike?)/Octopus + 3 value pellets.*[35] The Onkia differs from the Tetras, apart from size and weight, initially only in that it is marked with a value pellet.[36] In a second Onkia series the head no longer bears a hair band, instead of

[33]See Jenkins, above, note 14; *Ancient Greek Coins*, p. 181; Kraay, above, note 15.

[34]In the following the terms Trias = four-twelfth piece, Tetras = three-twelfth piece are used, on this H. Chantraine, *JNG* (1962), p. 51-58. On the development of Sicilian bronze coinage in the 5th century BC in general *Atti del VI Convegno del Centro Internazionale di Studi Numismatici, Napoli 1977* (in press); C. Boehringer in: *SM* (in press).

[35]E. Boehringer, *Die Münzen von Syrakus* (Berlin/Leipzig, 1929) (hereafter Boehringer, *Syrakus*) Nr. 613-622. For these and the following small bronzes see R. R. Holloway, "L'inizio della monetazione di bronzo siracusana," *Atti del VI Convegno del Centro Internazionale di Studi Numismatici, Napoli 1977* (in press).

[36]Boehringer, *Syrakus*, Nr. 624-625.



the octopus now the sepia with thicker body[37] is shown, the value pellet is missing (Tafel 39, 21). The weight of the tetrantes fluctuates between 3 and 5 gm., that of the onkiai between 1 and 1.7 gm., the minted bronze litra therefore has a weight of about 20 gm.

The minting of the sepia value, the onkia, is apparently discontinued after some time, that of the octopus value on the other hand continued. We can assume that the tetras is continuously designated by the reverse type of the octopus, in other words, that all Syracusan bronze coins with octopus from this epoch are tetrantes. This also applies further, when at a later point the value marking by pellets is omitted. The stylistic development of the heads on the obverses shows us the relative sequence of the pieces: First Nike (?) to right, then to left, Dionysos, Arethusa both right-facing and left-facing, Apollo head right-facing, finally Arethusa frontal (Tafel 39, 18, 20, 22-26).[38] The nominal becomes successively lighter in the process, whereby the individual series are each quite precisely calibrated. A larger group we see at a litra weight of 12-14 gm.; with the tetrantes with the Arethusa head from the front it is then again almost halved, the litra weighs only around 7-8 gm.

When was this last weight reduction undertaken? The decisive arguments for this we cannot read from the coins of Syracuse, since these continue to mint without visible interruption, but rather from four other minting places of eastern Sicily, Gela and Kamarina on one side (Tafel 39, 27-30),[39] Leontinoi and Katane (Tafel 39, 31-34)[40] on the other side. In the first-mentioned two cities the Carthaginian storm of 405 BC interrupts the minting at a moment when the litra weight stands at 12-14 gm., after it had initially amounted to about 20 gm. here as well. In Leontinoi on the other hand, which regained its autonomy through the Carthaginian peace in the year 405, only to lose it again already in 402, as well as in Katane, which was destroyed by Dionysius in 402, we find tetrantes and onkiai at the standard of about 7 gm. There can be no doubt about the value determination, it is secured by value pellets. From this consequences must also be drawn for the dominating Syracuse, it seems to me unavoidable, since the mentioned neighboring cities have undoubtedly not reduced the weight on their own initiative, but oriented themselves to Syracuse. Syracuse must be seen as the pace-setter. That reform of the bronze money, which stabilized the weight of the mint litra at 7-8 gm., was therefore carried out by Dionysius after the Carthaginian peace of 405.

Around the fixed point 405 we can now arrange the various series of the early bronze coinage of Syracuse according to their weights, if we attribute any significance to weights at all. But we must do this, because the bronzes within the individual series were also always quite precisely

[37] And actually 10 arms, which however are not always all represented (e.g. München 1.49 gm.). The type: Boehringer, *Syrakus*, . r. 626-627; *SNG*Lloyd 1345.

[38] Nike to right: Boehringer, *Syrakus*, Nr. 613-622. — Nike to left: Boehringer Nr. 623. At this point the silver tetras *BMC*Sicily Syracuse 240 should probably be classified. Dionysos: A. Minì, *Monete antiche di bronzo della zecca di Siracusa* (Palermo, [1977], hereafter Minì), Nr. 19. Arethusa right-facing: P. R. Franke, "Leontinische ΦΥΓΑΔΕΣ in Chalkis?" *AA* 81 (1966), p. 401. Nr. 7. Arethusa left-facing: Minì, Nr. 14.16 (16: E behind the neck); Giesecke, Taf. 10,17. Apollo: Giesecke, Taf. 10, 10. Arethusa frontal: Rizzo, Taf. 48, 23-25; with signature E Ξ: Minì, Nr. 18. Underweight are the pieces with head right-facing (on raw flans of open form), which were found in Motya, either copies or Syracusan military money from 397/396 BC: A. Tusa Cutroni, "Le monete," *Mozia 5 Rapporto preliminare della campagne di Scavi 1968* (Roma, 1969), Taf. 84, 3-5 and *Mozia 7, Rapporto preliminare della campagna di Scavi 1970* (Roma, 1972), Taf. 60, 1-3.

[39] Gela: Jenkins, (cf. above, note 19), Nr. 495-534. Kamarina: U. Westermark and G. K. Jenkins, *The Coinage of Kamarina* (im Druck). For both minting places see G. K. Jenkins in *Atti del VI Convegno del Centro Internazionale di Studi Numismatici, Napoli 1977* (im Druck).

[40] See C. Boehringer in *Atti del VI Convegno del Centro Internazionale di Studi Numismatici, Napoli 1977* (im Druck).



calibrated, as numerous weighings have shown.[41]

Before 405 the type *Female head left-facing/Quadratum incusum with star* was introduced, whose weights fluctuate between 4.2 and 5.4 gm. (Tafel 39, 35).[42] The nominal is not easy to determine. In my opinion it concerns the hemilitron of a litra of barely 11 gm.[43] The type seems not to have been minted for long, since the pieces are rarer than the following ones and almost always show longer circulation wear, hardly ever die-fresh.

The next type adorns a *Female head left-facing/wheel with ΣV-PA and 2 dolphins*, it has been issued both in silver and in bronze (Tafel 39, 36-38).[44] This hardly happened simultaneously, and we may assume that the bronze nominal replaced the more valuable silver one, but not vice versa. The silver piece is a hemilitron by weight, so the bronze nominal is established from the outset. Since it weighs 3.4-4.1 gm. with an average of 3.7 gm., the litra weight amounts to barely 8 gm., it therefore corresponds to that of the octopus nominal with the frontal Arethusa head. The wheel bronzes must therefore have been introduced like those after 405 BC.

Another bronze series is obviously based on the same litra weight, type *Female head left-facing/dolphin + mussel*, ΣΥPA (Tafel 39, 39).[45] The weight lies with 2.8-3.6 gm. at an average of 3.2 gm. somewhat below that of the wheel hemilitrai. That the *Dolphin + Mussel* hemilitrai were approximately contemporary with the wheel hemilitrai, their common circulation speaks for this. Both series seem, however, to have been minted neither completely simultaneously, nor to clearly succeed each other. I have the impression that they overlap each other, whereby the wheel type begins earlier, the *Dolphin + Mussel* type lasts substantially longer. Apart from the slight weight difference, both series differ in two other things. That is once the production technique of their flans: Those of the hippocampus hemilitrai are cast in "open" form in contrast to those of the wheel series, they often bear signs of hasty mass production. The second indication is provided by the artist signatures and handwritings: KIMΩN, ΦPV(gillos) and EV(kleidas?) with the heads of the wheel series, EV and IM with those of the *Dolphin + Mussel* series. For the latter also the beginning is thus secured still in the period of the signing artists, and at least for a time both series were emitted parallel.

BRONZE LITRAI

Yet a third nominal besides tetras and hemilitron was introduced around the turn from the 5th to the 4th century BC, *head of Athena with Corinthian helmet left-facing/hippocamp left-facing* (Tafel 39, 40-43).[46] The type has been regarded by the majority of researchers for a century as

[41]See T. Hackens in *Atti del VI Convegno del Centro Internazionale di Studi Numismatici, Napoli 1977*, (im Druck).

[42]Rizzo, Taf. 48, 20-21. Individual pieces above and below the given values, the average lt. Giesecke, p. 35, Nr. 12 from 15 specimens at 4.7 gm.

[43]The alternative would be a trias, a value that however was otherwise never minted in Syracuse; also this nominal would presuppose a mint litra of about 16 gm., a weight that no longer existed at the time of minting of this type in my opinion. Signature E (e.g. Bank Leu 6, 8. Mai 1973 (Virzi), 213); associated tetras with E at Minì, Nr. 16.

[44]Rizzo, Taf. 43, 18-29, Signature ΦPV. Taf. 48, 22 as well as R. Weil, "Die Künstlerinschriften der sizilischen Münzen," *BWPr* 44 (1884), Taf. 3,8, Signature EY. Schweizerischer Bankverein, 27. Okt. 1977, 195 (Die of Kimon, signature off flan).

[45]Rizzo, Taf. 48, 26-27. Signaturen EY (Minì, Nr. 12, korrigierte Lesung) and IM (Schw. Bankverein, 27. Okt. 1977, 199). Possibly belonging as tetras the type B. V. Head, (cf. above, note 20), Taf. V,16; see R. R. Holloway (cf. above, note 35) with note 26.

[46]Helmet symbol snake: Schweiz. Bankverein, 27. Okt. 1977, 209, stylistically belonging to the end of the 5th century BC. Helmet symbol olive wreath: Head (cf. above, note 20), Taf. 7,2; Minì, Nr. 30. Two dolphins, helmet

tetras of the epoch of Timoleon (344-336 BC), until excavations of recent decades have proven that it must be substantially older: *Hippocampus* have namely been found in the destruction stratum of Motya[47] which was conquered by Dionysius in 398/397 and abandoned afterward, and which was then no longer rebuilt. This does not mean that the type could not have been minted continuously over five decades, it was only introduced still in the 5th century. There are quite a number of subseries that differ in style and fabric. An older one is minted on smaller and thicker flans, with it Athena wears a snake as helmet symbol. A clearly younger series has larger flans of somewhat heavier weight, here Athena wears an olive wreath on the helmet. In a third series with olive wreath two dolphins swim around Athena's head, in a fourth any helmet symbol is missing. The precise sequence of the individual series is not yet clarified, it is clear only, as said, that the oldest of them must begin before 397. The weight of the specimens with the snake as helmet symbol lies at 6.0-6.7 gm. The pieces with the olive wreath are heavier, they weigh between 6.6 and 8.6 gm. In both series individual specimens fall above and below these margins, whereby the reason again seems to lie in the fact that older coins—for example *Incuse*- Hemilitren[48]—were overstruck.

What was the value of the *Hippocampus*? The answer to this question depends on how we date them. If the type was first introduced with the reform of 405, as I suppose, then it must concern litrai in bronze. That its average weight initially lies below that of two hemilitrai may be indicated, since that is a phenomenon to be observed repeatedly with larger nominals. Quite clearly litrai of the reform standard of 405 are then the somewhat heavier pieces with the olive-wreath-adorned Athena. I would like to place their minting beginning with reservation around 390 BC in the years after the great Carthaginian victory.

BRONZE DRACHMS

Parallel to the last-mentioned *Hippocampus* series, as never doubted, an oversized bronze nominal has been issued, types *Head of Athena with olive-wreath-adorned Corinthian helmet ΣΥPA/sea star between two dolphins* (Tafel 39, 44-45).[49] The weight amounts initially to about 32-38 gm., later it gradually sinks down to around 24 gm. Some rare specimens show between the beaks or the tail fins of the two dolphins a value pellet (Tafel 39, 45),[50] so the value of the coin amounts to one unit. One unit of what?

The answer now comes easily. It must concern bronze drachms, whose weight corresponds to five *Hippocamus* litrai. Bronze drachms have therefore circulated as a semi-high nominal alongside the gold pieces and the silver dekadrachms, they bridge the gap between the heavy precious metal nominals and the small bronzes.

It is appropriate to support this surprising result[51] through some supplementary considerations, in order to prevent objections.

For a long time I have wondered with what justifications the *Sea star + Dolphin* heavy bronzes

symbol olive wreath: *SNG*Cop Sicily 722. — Without helmet symbol (early): Minì, Nr. 33.

[47]B. S. Isserlin, W. Culican, W. L. Brown, and A. Tusa Cutroni, "Motya, 1955," *PBSR* 26 (1958) p. 7 f. (Südtor, Graben 3); Tusa Cutroni, *PBSR* 26, p. 29; and (above, note 38), *Mozia* 5, p. 178, Nr. 20 and p. 181 f. (Wohnstadt).

[48]E. Gabrici, *La monetazione del bronzo nella Sicilia antica* (Palermo, 1927), p. 172, Nr. 73-74.

[49]B. V. Head, (see above, note 20), Taf. 7,1; Jenkins, *Ancient Greek Coins*, p. 182 and Abb. 404, 413; Kraay, *Archaic and Classical Greek Coins*, p. 237; Older literature on the nominal most recently discussed by R. J. A. Talbert, *Timoleon and the Revival of Greek Sicily 344-317 B.C.* (London, 1974) 182-88.

[50]A. Minì, Nr. 28-29.

[51]The same result was reached by E. Cammarata, see "Interventi," *Atti del VI Convegno del Centro Internazionale di Studi Numismatici, Napoli 1977* (im Druck).

are addressed in the literature as litrai or even as hemilitrai. Their weight at around 35 gm. is twice as high as that of the oldest Syracusan bronze mint litra, thus of 4 early octopus tetrantes. While the new medium of bronze coins had to establish itself with these, the monetary economy at the time of emission of the heavy bronzes had long been accustomed to it. No different than for example in Rome, the development in Syracuse proceeded from heavier to lighter bronze money, not the reverse. Since the early litra weight of about 20 gm. is undoubtedly established by value pellets, the value of the later, almost twice as heavy *Sea star + Dolphin* bronzes must be higher than the litra.

Likewise I have always wondered again why there should have been no middle nominal in the monetary system of Dionysius after the expiration of tetradrachm minting between the precious metal large gold and the admittedly sparse small bronzes according to the current literature, as if there were no further gold piece between pfennig and mark today. Since small values in silver were certainly not minted, the missing intermediate link had to be sought necessarily in bronze money. The excavation results known until now show that at least the *hippokamp* litrai are also to be found there.

The Syracusan heavy bronzes have been overstruck in numerous minting places on Sicily, in Agyrion, Hadranon, Halaisa, Henna, Herbessos, Kentoripa, Mytistraton, Petra, by Leuten, who sign $\overline{A}$ (= Kampaner?), by the Sileraioi (= Lukaner) and the Tyrrhenern, the last-mentioned undoubtedly settled mercenaries.[52] There is agreement that these overstrikes belong to Timoleonic time. The same epoch is also assigned to the Syracusan subtypes. It does not seem clear to me why freshly circulated Syracusan bronze coins should have served as blanks. On the other hand, it is understandable when, upon the collapse of the Dionysii realm, previously highly overvalued money, behind whose nominal value no powerful state authority stood anymore, was used in this way as raw material.

Significantly, the mentioned minting places, insofar as they are localizable, all lie at a certain distance from Syracuse in the realm of Dionysius, but not in the Carthaginian epikrateia. Equally revealing is that obviously none of these minting places—and also no others in the 4th century—minted such heavy coins on their own, but only used Syracusan heavy bronzes as flans when these were available to them. From this follows that originally and certainly over a long time only Syracuse could have minted the *Sea star + Dolphin* nominal. This fact can easily be explained for a tightly governed realm like that of the Dionysii, with difficulty however for a symmachie of formally equal poleis as under Timoleon.

For a long time it has been known that the Syracusan heavy bronzes are found on the coasts of the Adria.[53] Likewise there exist heavy bronzes from Kroton and Issa in Dalmatia, which are overstruck on Syracusan pieces.[54] How did these reach there to serve as blanks? Under Dionysius

[52]See B. V. Head (cf. above, note 20), Taf. VIIa; W. Giesecke, Taf. 16, 1,3-9 and 17,1. A. Tusa Cutroni, "La riconiazione della litra siracusana nel IV secolo a.C.," *Sicilia Arch.* Bd. 1, Heft

[53]See G. Gorini, "Sulla circolazione di monete greche nell' Italia settentrionale e in Svizzera," *QTicNumAntClass* 2 (1973), p. 15-28.

[54]Kroton: see Typ Bank Leu 6, 8. Mai 1973 (Virzi) 31; W. Giesecke, *Italia Numismatica* (Leipzig, 1928; hereafter Giesecke, *IN*), Taf. 17,13; B. V. Head (see above, note 20), p. 34, note 45; J. P. Six, "Sur les premières monnaies de Bronze émises à Syracuse," *NC* 1875, p. 26 ff.; G. Manganaro *Kokalos* 14-15 (1968-69) 133 f.

Issa: Typ *BMC*Sicily 258,16 (erroneous under Lipara, 29.6 gm.); J. Friedländer, "Ueberprägte antike Münzen," *ZfN* 4 (1877), p. 335; F. Imhoof-Blumer, "Griechische Münzen aus dem Museum in Klagenfurt und anderen Sammlungen," *NZ* 16 (1884), p. 257, Nr. 67; J. Brunšmid, *Die Inschriften und Münzen der griechischen Städte Dalmatiens*, Abh. des arch.-epigr. Seminares der Universität Wien 13 (Wien, 1898), p. 60, Nr. 1.

The Syracusan heavy bronzes were found numerously in Lokroi, see A. Tusa Cutroni, "Siracusa e Locri," *Kokalos* 17 (1971), p. 55-61. Probably the heavy bronzes from Thurioi (Typ Giesecke, *IN*, Taf. 17,12) also belong in this

I this was easily possible, since his dominion over Kroton (from 379? BC) and his commercial interests in the Adria extending up to the mouth of the Po, where he founded Adria, are well documented. Upon the collapse of the realm under the younger Dionysius these coins then had only metal value and were reused. Timoleon on the other hand, to whom the Syracusan heavy bronzes have been attributed until now, was never active in lower Italy or even at the Adriatic Sea.

No argument against our dating of the Syracusan heavy bronzes in the epoch of the elder Dionysius can be that these came exclusively to light in excavation contexts of Timoleonic time: The settlement strata—for example in Gela[55]—are initially dated on the basis of the coins found in them, but not vice versa; to want to date the coins now again according to them would be circular reasoning. Moreover, it is to be assumed that coins of the Dionysii also continued to circulate in Timoleonic time. On the other hand, the treasure find from Milocca[56] speaks clearly for a date of the *Sea star + Dolphin* bronzes in the first half of the 4th century: The hoard contained—besides 12 coins of this type and 7 hippokamps—a "Gorgoneion" from Himera and 117 bronze coins from Akragas, 6 cast ones, 19 with head of *River God/Eagle on column* (all counterstamped up to one), the rest of the older type *Eagle/Crab*.[57]

It is striking how carefully the *Sea star + Dolphin* bronzes are produced.[58] Their flans were cast in contrast to the heavy bronze coins of the 5th century (cast bronzes from Akragas, Gorgoneia from Himera) using the same elaborate technique of the double shell form that was customary for the large silver coins of the 5th century. If we understand them as drachms, this care explains itself, they should recall the silver money of the good old time in memory.

The famous fleet expedition of the first Dionysius to Etruria and Corsica in the year 384 BC served according to Diodorus (15. 14.3-4) above all to procure financial means for the planned 3rd Carthaginian war. It seems reasonable to see in Diodorus' statement an *interpretatio ex eventu*, since the booty that Dionysius captured at that time amounted to 1500 talents above expectations. Etruria is also a region where silver and copper were mined, which were undoubtedly most welcome to Dionysius. But we should take quite seriously the motivation he himself gave for the expedition, the elimination of piracy:[59] Syracuse was undoubtedly then particularly dependent on a secure trade route to Massilia; Massilia controlled the trade with tin from Britain, and tin is needed for alloying copper.

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context, likewise two further types from Kroton (Giesecke, *IN*, Taf. 11,5 and above all Taf. 12,10). Revealing is the low weight of the overstruck specimens (see Giesecke, *SN*, p. 166; *IN*, p. 79 and 84) which points to a relatively late date of the subtypes.

[55]How many Syracusan bronzes are found in Gela that belong to the time of the Dionysii according to what is said here, show the regular publications of P. Orlandini in the *AIIN* 2-11 (1955-64); "Storia e topografia di Gela dal 405 a 282 a.C. alla luce delle nuove scoperta archeologiche," *Kokalos* 2 (1956), p. 158-76: The city remained after 405 BC probably not so deserted as assumed. See also Talbert, (cf. above, note 49), p. 146-60.

[56]Around 1930?, *IGCH* 2162.

[57]Types: Gabrici (cf. above, note 48), Taf. 1, 1-2, 4-5, 27-34, 38. The number data in Orsi are not unambiguous, hence the divergences that M. T. Currò, *AIIN* 9-11 (1962-64), p. 231 and 238 shows.

[58]This fact was repeatedly noted, see G. F. Hill (above, note 10), p. 114. On flan production technology see T. Hackens, "Terminologie et techniques de fabrication," *Numismatique antique, problèmes et méthodes* (Nancy/Louvain, 1975), p. 4 ff.

[59]Main objective of the expedition was according to Strab. 5.2.8 Corsica. Diod. 5.13.3 mentions a "Syracusan harbor" on the island: The direct route from Syracuse to Massilia leads between Sardinia and Corsica.



ΔΡΑΧΜΑΙ ΚΑΤΤΙΤΕΡΟΥ

With this the keyword has been given for a long disputed passage in the pseudo-Aristotelian economics that originated around 300 BC. There it says II B, 20c (1349a 32-36):

Οὐκ εὐπορῶν δὲ ἀργυρίου νόμισμα ἔκοψε καττιτέρου, καὶ συναγαγὼν ἐκκλησίαν πολλὰ τοῦ κεκομμένου νομίσματος ὑπερεῖπεν, οἱ δὲ ἐψηφίσαντο καὶ μὴ βουλόμενοι ἕκαστος ὃ ἂν εἵλετο ἔχειν ὡς ἀργυροῦν ἀλλὰ μὴ καττιτέρινον.

"When he (Dionysius) lacked silver, he minted gold from tin, and after he had called the popular assembly, he held a flaming speech in favor of the freshly minted money. Although the Syracusans voted reluctantly for it, each should hold what he received in payment for silver money, not however for tin money."

This statement is supplemented in the Onomastikon of Pollux 9. 79 as follows:

...τοὺς μέντοι Συρακουσίους καττιτέρῳ ποτὲ ἀντ' ἀργυρίου νομίσαι Διονύσιος κατηνάγκασεν · καὶ τὸ νομισμάτιον τέτταρας δραχμὰς Ἀττικὰς ἴσχυεν ἀντὶ μιᾶς.

"Dionysius however forced the Syracusans once to accept tin money instead of silver money; and the small coin was worth four Attic drachms instead of one."

These tin coins have been searched for long and in vain. Until now only a single dekadrachm of the Euainetos type has become known that could come into question here: It is made of bronze and was possibly tinned.[60] Since it comes from its own die and is of relatively good style, it may actually have originated from the official mint. But now for over 80 years without parallel, one would rather hold it for a chance product than for the only preserved witness to the cited sources. But must we interpret these at all as has mostly happened until now, that we have to search for coins of pure tin?

Let us briefly recapitulate the properties of tin.[61] It is only slightly harder than lead, but substantially softer than gold, the ratio numbers for the hardness of lead: tin: gold amount to 1:1.5:10. In pure form it is therefore neither suitable as coinage metal nor for tool production. Its special value comes from the fact that it mixes easily with any other metal. Although soft by itself, it imparts greater hardness to the metal to which it is added than that alone possesses. Copper, which in pure form can only be cast with difficulty, becomes excellently castable bronze through a few percent tin addition. It is also important for this that tin already melts at 232 degrees Celsius: the melting point of pure copper amounts to 1083 degrees, with an addition of 10 percent tin this sinks to about 930 degrees, with 20 percent even to about 750 degrees, which substantially simplifies the casting work. Finally, tin possesses the same penetrating coloring power as nickel and dominates all alloys. Already 20 parts tin completely displace the red color of 80 parts copper, with 30 parts tin the bronze becomes white (so-called speculum bronze). An object that should be tin-colored therefore needs to consist only to a small part actually of tin. Similarly it behaves with modern nickel coins: The five-cent piece of the USA, which is nickel-colored and also called "nickel," contains only 25 percent nickel with 75 percent copper.

Two requirements are placed on coinage metal: to be soft and malleable in order to be well struck, and to be hard in order not to wear away too quickly in circulation. Both opposing

[60] Weight? Tin content? A. Evans, "Contributions to Sicilian Numismatics," *NC* 1894, p. 219-22 with Taf. 8, 1; Also Hill (above, note 10), p. 115 f.

[61] The following information stems from the work of K. Kluge and K. Lehmann-Hartleben, *Die antiken Großbronzen I, Die antike Erzgestaltung und ihre technischen Grundlagen* (Berlin, 1927), p. 23-66 (Kluge).



properties are united most balanced in bronze at about 6 percent tin content. As is known through analyses, Greek mint bronze of the 4th century BC was however often an alloy of often higher tin content than 6 percent, the upper limit lies at about 16 percent.[62] To increase it still further was not advisable, since the material then becomes still harder and at the same time brittle, thus unsuitable for striking. The color is a more or less reddish yellow with 10-15 parts tin. Beyond this, the technique of tinning was known, as we know from early imperial sources.[63] One was therefore able to strengthen the desired effect superficially, only we can hardly prove it today anymore because of the corrosion of the pieces.

For these reasons it seems to me reasonable that we should not keep looking for pure tin coins to find the Δραχμαὶ καττιτέρου of Dionysius.[63a] These must rather be hidden among the bronze coins known to us. This leads us directly to the heavy *Sea star + Dolphin* bronzes, which we defined above as drachms. J. P. Six had already arrived at the same view in an important essay over a century ago,[64] without however prevailing. Six had still held the pieces for litrai, so his argumentation lacked an essential support.

Let us return once more to the text of Pollux. The information he gives us obviously goes back to two different sources. The first agrees in its content with that of the economics and may even be taken from it. It designates tin as the metal of the new coins, but leaves open whether these had the size of the replaced silver coins and were thus of lower value, or whether they contained so much more tin that they were cheaper than silver, their metal value thus corresponded to that of the replaced silver coins. A tin drachm would then have to be substantially heavier than a silver drachm.

With this first statement the second apparently stands in contradiction, which adds by way of explanation that the small coin was worth four Attic drachms instead of one. Does the diminutive say that the tin drachm was not heavier than a silver drachm, or that it had little metal value, but could also be a larger piece? I would like to accept both simultaneously, and indeed for the following reason. The *Sea star + Dolphin* bronzes weigh as we saw about 32-38 gm. Already J. P. Six had suspected[65] that the pieces contained about 12.5 percent = 1 eighth tin—a value that newer analyses might confirm—and noted, this corresponds quite precisely to a weight drachm of

[62]So already F. Lenormant, *La monnaie dans l'antiquité* 1 (Paris, 1878), p. 199 f. Still fundamental J. Hammer, "Der Feingehalt der griechischen und römischen Münzen," *ZfN* 26 (1907-8), p. 119-22, therein the old analysis results of E. v. Bibra, *Die Bronzen- und Kupferlegierungen der alten und ältesten Völker* (Erlangen 1869). See also P. Naster and T. Hackens, "Bibliographie commentée des analyses de laboratoire appliquées aux monnaies grecques, romaines et celtiques," *Methods of Chemical and Metallurgical Investigation of Ancient Coinage*, ed. E. T. Hall and D. M. Metcalf (London, 1972). E. R. Caley, "The Composition of Ancient Greek Bronze Coins," *Memoirs of the American Philosophical Society* (Philadelphia, 1939), p. 75-82 believes that in Syracuse coins with over 10 percent tin were first contained by Agathokles, what was already earlier the case in Macedonia and greater Greece—a conclusion that underlies only two analyzed pieces, none of them one of our bronze drachms.

[63]Plin. *H.N.* 34, 160 and 162: The Gauls were masters in this, they mastered a technique in which the tin coating was hardly distinguishable from silver—a further indication of relations to Massilia? In the same category falls also the phenomenon that B. Baldanza, "Sulle monete mamertin d'argento," *IN* (1970), p. 161-64 and 189-92 describes.

[63a]That the word κασσίτερος in Greek from the beginning did not designate only pure tin, but also a tin-colored alloy or bronze with tin coating, is indicated by the leg guards of tin that Homer *Il.* 18. 613 and 21. 592-3 mentions. They present the hoplologists with the same interpretation difficulties as the tin drachms of Dionysius present to the numismatists (cf. H. W. Catling, *Archaeologia Homerica* Bd. I Kap. E. *Kriegswesen* I [Göttingen, 1977], p. 144; R. J. Forbes, *Archaeologica Homerica* Bd. II Kap. K. *Bergbau, Steinbruchtätigkeit und Hüttenwesen* [Göttingen, 1967], p. 28)—not because none have been found so far (that could be chance), but because pure tin is too soft for leg guards and thus unsuitable. So it seems reasonable to seek the solution of the problem also there in the same direction, cf. M. Brown, "Εὐκνήμιδες Ἀχαιοὶ," *Mnemosyne* 14 (1961), p. 103 f.

[64]J. P. Six, "Sur les premières monnaies de bronze de Syracuse," *NC* 1875, p. 26-33.

[65]Six (cf. above, note 64), p. 28 f.

4.32 gm. Our bronze drachms thus actually contained one (weight) drachm of tin, only not in pure form, but alloyed. That the total metal value of the piece was substantially lower than that of silver, is self-evident.

It is therefore irrelevant for our question whether the bronze drachms were additionally tinned in order to give them an appearance that distinguished them from the mass of ordinary small bronze divisional coins tetras-hemilitron-litra, or whether already their weight in relation to the divisional coinage sufficed to characterize them as drachms.

But what then should the statement mean that the pieces were worth four Attic drachms instead of one? Were they so highly overvalued at a later point, after a further devaluation? It would not be inconceivable. For now I lack a convincing explanation of this passage.

Our result is however supported by a Hellenistic parallel. Tin coins are also mentioned in inscriptions from Delos under Attic administration from the 2nd century BC. In the inscription Delos 1450 four stephanephore tetradrachms "with one of tin" are recorded,[66] in the inscription 1442 from 146/145 BC "six Rhodian drachms, one of tin, four Rhodian hemidrachms."[67] The examples can be multiplied.[68] Without going into the problem of identifying the pieces here, the important point for us is clear: Both times it concerns the same high nominals that Pollux also mentions for Syracuse.

OUTLOOK

Through the dating of the *Sea star + Dolphin* bronzes in the time of the Dionysii and through their identification with the literarily transmitted tin drachms, our picture of the financial system of Syracuse in the 4th century receives a substantial expansion. We now see the elder Dionysius also in the field of coinage as a trailblazer, who compromiselessly translates theoretical considerations of the sophists[69] into economic processes in reality. A part of the large gold circulating within the realm boundaries has little metal value, its exchange value is guaranteed by the state power, in other words: The gold piece is no longer accepted only because its metal is valuable, but on the basis of the agreement to assign it a value. At the same time precious metal coinage is restricted to large nominals and obviously reserved for such recipients whose high demands cannot be satisfied with credit money, above all therefore for foreign mercenaries. Thus a consequent distinction is made between circulating money and a kind of foreign exchange. We can observe the same development later also in the Hellenistic monarchies, particularly in the Ptolemaic realm.[70]

Important is also another piece of information that the revised chronology of the coins conveys to us for the history of the realm of the elder Dionysius. Only Syracuse initially minted heavy tin-bronze drachms alongside large precious metal nominals. This shows even more clearly than previously suspected the ruler's effort to concentrate his arché "into a single polis," as Plato says.[71]

[66] *Inscr. Délos* 1450, A. 107 (see 1443. A I. 160; 1449. Aab II. 36); See L. Robert, *Études de numismatique grecque* (Paris, 1951), p. 164 f., who likewise does not believe in the existence of pure tin coins.

[67] *Inscr. Délos* 1442. B. 52 (Metrophanes).

[68] For example *Inscr. Délos* 1439. Bbc II. 91; 1442. B. 51.

[69] See Stroheker, (above, note 4), p. 163; R. R. Holloway, (see above, note 35).

[70] See Jenkins, *Ancient Greek Coins*, p. 245 f.

[71] Plato, *Ep.* 7, 332 C. Lokroi begins coinage in its own name only after the end of the rule of the Dionysii. Still uncertain is where the anepigraphic litrai with youth's head with laurel-crowned pilos/Skylla are to be localized (*SNG*Cop Italy 1992-93), which were presumably attributed to Skylletion (G. F. Hill, "Greek Coins Acquired in the British Museum in 1917 and 1918," *NC* 1919, p. 3-4). They circulated around 390-380 in northeastern Sicily, where I repeatedly saw specimens together with *hippokamps*.



The suppression of any other money than that in the name of Syracuse was certainly not unchanged effective from the beginning of the reign of Dionysius. It rather developed gradually and was strengthened particularly by the great Carthaginian war, probably also not without exceptions. To illuminate this process, the coins can make an outstanding contribution, whereby the clarification of many individual questions remains for the future.

If the financial system of the realm of Dionysius was built to a decisive part on far undervalued coins, on credit money, the extent and effects of the collapse of the realm also become more concretely graspable than before. We recognize how the financial basis of a large part of the state-supporting citizenry of the polis was gradually hollowed out under the apparent prosperity under the Dionysii. The collapse of the realm brought the hour of truth when such monetary possession was forcefully devalued. It remains to be investigated what low nominals the tin-bronze drachms then continued to circulate as, and whether and how they were incorporated into the reform system of Timoleon (344-336 BC). This now appears in a changed light. Not to be overlooked is also that the impoverishment of the citizenry contributed its part to the fact that no stable democracy could develop in Syracuse in the following decades.

As a final point, I would like to raise with all caution the question whether that constitutional dualism, which is recognized between polis and ruler, might not also be reflected in the coinage? Both with the heavy gold as with the dekadrachms, as with the bronze hemilitrai of the *Wheel* and *Dolphin + Mussel* types, it can be observed that two different workshops were active that competed with each other for a time. The most important die-cutter of one workshop was Kimon, of the other and longer active Euainetos. Is there really only an artistic agon behind the side-by-side of the two workshops, as always assumed? According to what criteria were the commissions for die-cutting—with which coin striking need not necessarily have been connected—assigned?

I tend toward the old interpretation, since the existence of "marine" and "grain" workshops for the tetradrachms is already secured for the period of the signing artists before the rise of Dionysius. Nevertheless, it seems necessary to me not to dismiss the question entirely in the future: New arguments may arise that there was more behind the competition than previously suspected.



TAFEL 38

1.	Syracuse	Dekadrachm of Kimon	Siracusa
2.		of Euainetos	Siracusa
3.	”	Tetradrachm, signed EV	Naville 6, 28. Jan. 1924 (Bement), 495
4.		of Kimon	Siracusa 54496 (Ognina, *IGCH* 2120)
5.		Drachm of Eumenos	Hess-Leu 11, 24. März 1959, 91
6.		” of the Ähreneteliers (Ear of Wheat Workshop)	Hess-Leu 11, 24. März 1959, 94
7.		Tetradrachm signed IM	London, *BMC*Sicily 214
8.		AV 1.32 gm.	Berlin, ex Löbbecke
9.		AV 0.665 gm.	London, *BMC*Sicily 138
10.		AV 0.30 gm.	Berlin, ex Imhoof-Blumer
11.		AV 3.475 gm.	Slg. Pennisi
12.		AV 1.74 gm.	Hess-Leu 3, 27. März 1956, 210
13.		AV 1.15 gm.	Stuttgart
14.		AV 0.56 gm.	London, *BMC*Sicily 139
15.		AV 5.78 gm.	*Gulbenkian* 320
16.		AV 5.76 gm.	Siracusa
17.		AV 2.85 gm.	G. Hirsch 17, 12. Juni 1958, 10
A.	Akragas	AV (ca. 1.34 gm.)	Slg. de Ciccio (früher)
B.		AV (ca. 1.34 gm.)	Slg. de Ciccio (früher)
C.		AV 1.74 gm.	London, ex Hess-Leu 3, 27. März 1956, 66
D.	Gela	AV 1.75 gm.	London, *BMC*Sicily 1
E.		AV 0.88 gm.	London, *SNG*Lloyd 980
F.	”	AV 1.15 gm.	London, *SNG*Lloyd 981
G.	Kamarina	AV 1.17 gm.	London, *PCG* Taf. 14, 27

TAFEL 39

18.	Syracuse	AE 3.46 gm.	Slg. Grötzinger (früher)
19.	”	AE 1.55 gm.	London
20.		AE 2.85 gm.	London, *BMC*Sicily 131
21.		AE 1.46 gm.	London, *SNG*Lloyd 1345
22.	”	AE 3.62 gm.	Privatbesitz
23.		AE 1.88 gm.	Privatbesitz
24.		AE 2.39 gm.	München, *SNG*Deutschland Sikelia (im Druck)
25.		AE 1.99 gm.	Berlin 17067
26.		AE 1.67 gm.	München, *SNG*Deutschland Sikelia (im Druck)
27.	Gela	AE 2.96 gm.	München, *SNG*Deutschland Sikelia, 313
28.	”	AE 1.13 gm.	London, Weber 1336
29.	Kamarina	AE 3.76 gm.	Privatbesitz
30.		AE 1.55 gm.	
31.	Leontinoi	AE 2.23 gm.	”
32.		AE 0.68 gm.	
33.	Katane	AE 1.39 gm.	Siracusa 19720
34.		AE 0.42 gm.	Schweizer Bankverein (= *SBV*), Liste Herbst 1975, 40
35.	Syracuse	AE 4.82 gm.	*SBV*, 27. Okt. 1977, 187
36.	”	AE 3.50 gm.	Privatbesitz
37.	”	AE 3.71 gm.	
38.		AE 3.52 gm.	*SBV*, 27. Okt. 1977, 195
39.		AE 3.47 gm.	*SBV*, 27. Okt. 1977, 199
40.		AE 4.72 gm.	*SBV*, 27. Okt. 1977, 209
41.	”	AE 6.67 gm.	Privatbesitz
42.		AE 5.78 gm.	München, *SNG*Deutschland Sikelia (im Druck)
43.		AE —	Slg. Zeno 3452
44.		AE 31.36 gm.	Berlin, ex Dressel
45.	”	AE 24.21 gm.	Berlin, ex Imhoof-Blumer


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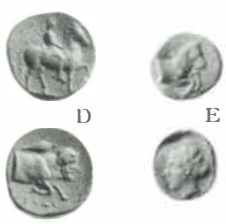

A B


7




8 9 10


C


D E


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16


17

DIONYSIOS VON SYRAKUS AR, AV



18 19 20 21 22 23 24 25 26



27 28 29 30 31 32 33 34



35 36 37 38 39



40 41 42 43 44 45

DIONYSIOS VON SYRAKUS AE