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SCIENTIFIC AND TECHNICAL STYLE IN EARLY GREEK PROSE

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Greek authors from the 4th century B.C. onwards in ever increasing numbers used a continuous, systematic, and discursive, though non-rhetorical and non-emotional prose, what in other words is sometimes loosely called »scientific style». It occurs within certain limits, as we shall see, in the Hippocratic. Above all it is manifest to us in the extant writings of Aristotle, and various reproductions and reflections of it can be found for instance in the technical writings of Xenophon and in Plato's later works. Later still it appears to constitute a fundamental feature in standard matter-of-fact Koiné and its Latin counterparts (from Varro onwards). In spite of considerable variation in details, and though no consistency in the use of its different characteristics can be expected — indeed consistency, if factually possible, would be stylistically monstrous — the »scientific style» may be said to have the following typical tendencies:

- Explicit argumentation ¹
- Systematic structure of exposition
- Lack of emotional colouring, external ornament, and superfluous elements
- Exactness of expression, e.g. consistent terminology
- Abstractness of expression, e.g. wide use of abstract nouns

¹ Argumentation in the sense of putting forward arguments in support of, or amounting to, a view, may of course take more or less 'implicit' linguistic shapes of infinite variety. But advanced argumentation seems to be often accompanied by certain recurrent 'explicit' patterns, such as arguments from impossibility («If X were Y, then . . . ; but it is not!» or «How could X be Y?» or «X being Y is impossible»), arguments from probability («X is likely to be Y rather than Z»), elaboration of conditional and causal hypotaxis, devices such as »necessarily», »indication», »proof», formulae of generalization (« . . . and similarly the rest»), formulae of conclusion («Consequently . . .»), and so forth. Such 'explicit' patterns of reasoning can, and indeed should, be studied from a stylistic point of view. The forms of logical argument, as systematized by Aristotle, represent a still further stage which is not our concern here.

As the 6th and 5th century background is not immediately clear,² I shall here attempt to sketch in approximate outlines the early history of the »scientific style». It will be convenient to examine the different genres of prose separately; perhaps at the same time some fresh light may fall upon the genres and individual authors.³

Gnomic style

The style of Ionian philosophy down to Anaxagoras very probably was of a g n o m i c kind, characterized by axiomatic statements loosely connected, expressive words, antithesis, assonance, and an accumulation of words and expressions of a similar meaning. Apart from *Thales* (Vors. 11), whose doctrines were presumably transmitted as isolated statements by the Milesians until they became written down,⁴ this style can be traced in *Anaximandros* (Vors. 12), whether or not one thinks he published his teaching himself,⁵

² W. ALY, »Formprobleme», *Philol. Suppl.* 21.3, 1929, p. 44–63, considers the »Stil der jonischen Wissenschaft» in a very large sense, including the style of Hekataios, as contrasted with Ionian story-telling. CARLA SCHICK, *Archivio glottol. ital.* 40, 1955, p. 89–135, derives scientific style, in a rather more restricted sense, from the Doric West; but as will appear below, she has not taken account of the whole of the material. G. RUDBERG in his important articles on early Greek prose style (*Skrifter utg. av Svenska Inst. i Rom* 2.1, 1939; *Symb. Osl.* 22, 1942, and *Suppl.* 11, 1942 and 14, 1953; *Eranos* 40, 1942; *Arctos N.S.* 1, 1954) usually avoids the term »scientific», but his own differentiation between »emotional» and »intellectual» style is somewhat over-simplified. J. HABERLE, *Untersuchungen über den ionischen Prosa-stil*, Diss. München 1938, also simplifies the matter in considering Ionic prose as a single whole; but his analysis contains many valuable observations. The classical texts considered by M. FUHRMANN, *Das systematische Lehrbuch, ein Beitrag zur Geschichte der Wissenschaften in der Antike* (Göttingen 1960), are principally rhetorical τέχναι.

³ The survey below attempts to take account of all Greek prose genres down to the early 4th century B.C., except solemn proclamations (e.g. *Hp. Jusj.*, 4.628 Littré; *Ar. Thesm.* 295–311) and dialogue, which are obviously irrelevant to the present purpose.

⁴ First by 5th century authors such as Choirilos and Hippias (cf. *A* 1.24–25). M. WEST, *Cl. Q.* 13, 1963, p. 175–176 thinks that the book of Anaximandros supplied the information about Thales' philosophy, but this would presumably involve detailed personal polemics, which I do not consider very likely. The implications of τεκμαιρόμενον *Diog. L.* 1.25 (*A* 1) cannot be determined.

⁵ The honour of having been the first prose author was attributed alternatively to Anaximandros, Pherekydes of Syros, Akousilaos, Alkmaion, and Anaxagoras. At any rate Anaximandros »published» a map of the world (*A* 1, 6). *Diog. L.* 2.2 (*A* 1 from Apollodoros) is not quite clear: τῶν δὲ ἀρεσκόντων αὐτῷ πεποιήται κεφαλαιώδη τὴν ἐκθεσιν, ἧ . . . W. BURKERT, *Rh. M.* 106, 1963, p. 133 n. 102 thinks that κεφαλαιώδη refers to the original style of the book, and Diogenes probably took it to mean this, though the common meaning of the adjective would rather point to a »summary» or »extracts»; and a little later in Diogenes (Vors. 1⁸ p. 82.5) καὶ αὐτός suggests that there existed an Ionic writing attributed to the philosopher. On the style of Anaximandros, cf. RUDBERG, *Eranos* 40, 1942, p. 133–134.

and in *Anaximenes* (Vors. 13).⁶ In so far as argumentation occurs in the fragments and the testimonia, it takes quite simple and rather implicit forms, such as γάρ clauses added to the statements.⁷ The gnomic ἀκούσματα and σύμβολα attributed to *Pythagoras* (Vors. 14, cf. 58 C) may be partly authentic,⁸ but the explanations which are sometimes added to the taboo prescriptions by means of ὅτι, γάρ, etc. (cf. e.g. Diog. L.8. 34—35, Vors. 58 C 3) are hardly older than the 4th century. The τί ἔστι and τί μάλιστα types of maxims (Iambl. VP 82—83, Vors. 58 C 4) in principle lack any kind of argument. Unfortunately we have no means of determining the patterns of thought by which the early Pythagoreans reached their achievements in mathematics and astronomy, but it can be assumed that the transmission of these achievements was mainly axiomatic and »acusmatic« until the beginning of the 4th century.⁹

One of the exoteric associates of the Pythagoreans, *Alkmaion* (Vors. 24), seems to have »published« his *Φυσικὸς λόγος* about 500 B.C. or early in the 5th century. The opening words are preserved (B 1). The gnomic character of the style is emphasized by the fact that three addressees are mentioned, a unique device in the opening of extant early prose texts, recalling the σφραγίς of *Theognis* (19—30).¹⁰

With *Herakleitos* (Vors. 22), the Pindar of prose, the axiomatic tendency of Ionian philosophy reached its culmination; and now for once we have substantial material at our disposal. As far as I can see the peculiarities of his

⁶ Note in particular the assonance and accumulation in Hippol. Ref. 1.7 (A 7) ἀέρα ἀπειρον ἔφη τὴν ἀρχὴν εἶναι, ἐξ οὗ τὰ γινόμενα καὶ τὰ γεγονότα καὶ τὰ ἐσόμενα καὶ θεοὺς καὶ θεῖα γίνεσθαι. This passage probably approximates to the original, as the doxographers are not likely to have invented such a suggestive string of words. Consequently the characterization of the style of *Anaximenes* in Diog. L. 2.3 (A 1, from Apollodoros?), κέχρηται τε λέξει Ἰάδι ἀπλῆ καὶ ἀπερίττω, does not mean a dry and concentrated matter-of-factness but rather, perhaps, a lack of poetic imagery or tortuousness (for instance, contrary to *Herakleitos*). In spite of this, elevation of style is perfectly possible; cf. Diog. Apoll. (below, p. 94).

⁷ E.g. *Anaximandros* A 14, *Anaximenes* A 6, B 2. Cf. DENNISTON, *Greek Particles*,² p. 58.

⁸ See W. BURKERT, »Weisheit und Wissenschaft«, *Erlanger Beiträge z. Sprach- u. Kunstwiss.* 10, Nürnberg 1962, p. 150—175, with references.

⁹ The contributions of *Philolaos* are largely unclear; cf. below, p. 95. The minor Pythagoreans treated in Vors. 16—20, 33, 45—46, 48—58 (now also in *Pitagorici*, a cura di MARIA TIMPANARO CARDINI, I—II, *Biblioteca di Studi Superiori* 28, 41, Firenze 1958—1962) very probably did not publish any written texts.

¹⁰ The tendency to antithesis which was characteristic of his philosophy is reflected in the fragments. In A 12 (esp. Aët.) there are indications of a marked assonance. Calling the style of *Alkmaion* »scientific« (CARLA SCHICK, see above p. 90 n. 2) is certainly misleading.

style¹¹ can all be considered as further developments of features inherent in earlier philosophical prose and gnomic poetry. Its main characteristics are: isolated, gnomic sentences;¹² violent antitheses, usually somehow twisted and often implying an oxymoron; frequent paronomasia, including simple assonance and anaphoric repetition; various amplificatory devices such as accumulation; expressive vocabulary. There are few examples of explicit argumentation apart from the *γάρ* clause type; cf. *διὰ τοῦτο* A 12; sometimes there occur explanatory comparisons, as B 51, 67 a.¹³

Ion of Chios in addition to his other activities wrote a prose work with the title *Τριαγμός* (Vors. 36) which seems to have adopted the gnomic style.¹⁴ On the other hand, the cosmological first part of Ps. - Hippokrates' *Hebdomads*, contrary to what could be expected, stands in a completely different tradition (cf. below p. 111 n. 71).

Early treatise style

With Parmenides argumentation had entered into philosophy as a significant vehicle of thought. In the first part of his poem there are several examples of arguments in *γάρ* and *ἐπεὶ* clauses, arguments from the impossible (Vors. 28 B. 2.7, 8.35, cf. 8.19, etc.), *ἀνάγκη*, *χρή*, *χρεόν* (B 2.5, 6.1, 8.11, 8.16, 8.30, 8.45), *σήματα* (B 8.2), concluding *οὕτως* (B 8.11, cf. 8.21, 8.25, etc.). At the same time it is interesting to note that the tone is manifestly affective: the goddess who reveals the truth to the poet makes a veritable *s p e e c h*. We shall return to this point. Somewhat later a visionary and hierophantic approach combined with some reasoning can be observed in Empedokles (cf. Vors. 31 B 3.9—13, 12, 17. 31—35, etc.), who was called the first rhetorician by Aristotle (A 19).¹⁵ In the prose of *Zenon* of Elea (Vors. 29) the thought actually proceeds by intellectual argument; Aristotle (A 10) regarded Zenon

¹¹ For details see E. NORDEN, *Die antike Kunstprosa*, I, Leipzig 1898, p. 18—20; W. SCHMID, *Gesch. d. griech. Lit.* I 1 p. 752; B. SNELL, *Herm.* 61, 1926, p. 353 ff.; G. RUDBERG, *Symb. Osl. Suppl.* 11, 1942, p. 128 ff.; and HABERLE's dissertation (above p. 90 n. 2).

¹² For this see HABERLE, *Unters.* p. 89 ff., with further references.

¹³ In B 34 *μαρτυρεῖ* is meant ironically and not as a real argument. A 5 *συλλογίζονται* and A 20 *ex quo fieri* are of course irrelevant.

¹⁴ B 2 may reflect an axiomatic literary criticism like that of Herakleitos B 40, 81, 129.

¹⁵ On the systematic composition of his poems, see B. A. VAN GRONINGEN, »La composition littéraire», *Verhandelingen d. K. Nederl. Ak. v. Wetensch., Afd. Letterk., N.R.* 65.2, Amsterdam 1958, p. 201—222.

as the father of dialectic. The fragments show that his method consisted largely of conditional arguments from the impossible (B 1 *εἰ μὴ ἔχοι μέγεθος τὸ ὄν, οὐδ' ἂν εἴη*), often with *ἀνάγκη* (B 1) or *δῆλον* (B 2) in the apodosis; occasionally a genitive absolute gives the basis for further argumentation (B 2); generalizing is brought about by the phrase *ὁ αὐτὸς λόγος* (B 1), cf. *ὁμοιον δὴ τοῦτο ἄπαξ τε εἰπεῖν καὶ ἀεὶ λέγειν* (ibid.); and *οὕτως* is used for summing up. Now, what is very remarkable about this discursive prose, is its lack of emotional colour or stylistic devices.¹⁶ I am inclined to doubt whether Zenon himself published it as it is now extant. What he gave was essentially a method to be applied to different cases (paradoxes, *ἀπορίαι* A 24, *ἐπιχειρήματα* A 23, B 2) in oral argumentation,¹⁷ and this suggests that the fragments derive from notes that supply in a concentrated form examples of his method. The stylistic anomaly apparently presented by Zenon's strict prose becomes still more obvious when we consider *Melissos* (Vors. 30). *Melissos* undoubtedly published a prose work on the nature of things (*Π. φύσεως* or *Π. τοῦ ὄντος*) from which the extant fragments come. The argumentation is on the whole of the Zenonian kind (note also the *σημεῖον* B 8.1). In addition to this the exposition has a marked and systematic structure: in B 7 the different parts of the assertion are successively taken up, and B 8 offers a typical section-ending (cf. below, *Anaxagoras*). But the style has yet a touch of gnomic prose. The statements sometimes have a pregnant character (e.g. B 1); various amplificatory devices are used; B 7 has the antithesis *τριχὶ μῆ μωροῖς ἔτεσιν*; assonance, though not pointed, is present (B 7 *μ* and *π*).

It is usually taken for granted that *Anaxagoras* (Vors. 59) was acquainted with Eleatic reasoning, though his philosophical outlook was rather of the Ionian kind. The style of his *Π. φύσεως*, and the combination of emotional and intellectual traits in it, has been discussed by several scholars.¹⁸ In fact it has much in common with the gnomic style: the solemnity of B 1 (cf. A 1, 42, 46); assonance; oxymoron (B 21 a); and the frequent anaphoric repetitions

¹⁶ The repetitions all come from the subject; note the significant change of verbal aspect, *εἰπεῖν*—*λέγειν*, in B 1; the assonant *μ* at the end of the same fragment may be accidental.

¹⁷ The tradition that Zenon wrote a *Π. φύσεως* is late (A 2), and the brief doxographical notices in *Diogenes* (A 1) give nothing typical whatsoever. References in *Plato* (A 11, in particular *Parm.* 128 d) and *Aristotle* (A 21—29) prove that *τὰ τοῦ Ζήνωνος γράμματα* were in wide circulation; cf. *τέχνη* A 13. Cf. also MAU, *Gnom.* 36, 1964, p. 459—460.

¹⁸ Cf. W. DEICHGRÄBER, *Philol.* 88, 1933, p. 347 ff.; SCHMID, *Gesch. d. griech. Lit.* I.2 p. 718; HABERLE, *Unters.* p. 94—96; RUDBERG, *Arctos* N.S. 1, 1954, p. 142. Antiquity repeatedly referred to his *μεγαλοφροσύνη* both in literary style and in personal character (A 1.6—7, A 15).

which emphasize the tendency to accumulative expression. The argumentation takes shape, apart from γάρ clauses, in various arguments from the impossible; further e.g. causal ὅτε B 6 bis; very typical genitive absolutes such as τούτων δὲ οὕτως ἐχόντων B 4 bis; note also the phrase γινώσκειν χροή B 5, cf. B 4. The arrangement tends to be systematized: pointed section-ending B 4 (first part),¹⁹ backward reference B 12. Also the occurrence several times of the abstract term περιχώρησις, whatever its origin, may be noted. But as the central part of B 12 clearly shows, Anaxagoras' philosophy is fundamentally a visionary proclamation which has been fitted into a simple intellectual scheme.

It will be convenient to use the term *early treatise style* for the type of style employed by Melissos and Anaxagoras. We shall return below (p. 97) to the question of its origins. There are various less known philosophers in the last decades of the 5th century who may have employed it: *Hippon* (Vors. 38), possibly *Archelaos* (Vors. 60),²⁰ *Kleidemos* (Vors. 62), *Menestor* (Vors. 32); add perhaps the curious *Κανών* of *Polykleitos* (Vors. 40) which was not purely technical nor really philosophical.²¹ However, the best-known representative of the early treatise style after Anaxagoras is *Diogenes* of Apollonia (Vors. 64).²² In the opening of his »treatise« he himself stated the principles of thought and style that he intended to employ (B 1): λόγον παντός ἀρχόμενον δοκεῖ μοι χρῆσθαι εἶναι τὴν ἀρχὴν ἀναμφισβήτητον παρέχεσθαι, τὴν δὲ ἐρμηνείαν ἀπλήν καὶ σεμνήν. The preservation of the requirement of σεμνότης is interesting, and the fragments in fact display a style of considerable weight with accumulation, anaphoric repetitions, and a polarization of concepts (B 2). On the intellectual side there are several examples of explicit argumentation; note also σημεῖα B 4 (cf. A 19.45). Regarding the arrangement, introductory ὃδ' at B 6 and the forward reference in B 4 may be noted. The extensive physiological description of B 6 gives an echo of technical medical style (below p. 109) though contrary to most of the Hippocratic tracts it was clearly written for laymen.

¹⁹ Essentially different, though perhaps developed from the primitive principle of »cyclic composition« (Ringkomposition), for which see W. A. A. VAN OTTERLO, Mededel. Nederl. Ak. v. Wetensch., Afd. Letterk. VII.3, Amsterdam 1944, and Mnem. 12, 1944, p. 192–207. The systematic structure of Anaxagoras' tract has also been pointed out by VAN GRONINGEN, La compos. litt., p. 231.

²⁰ It is doubtful whether he left behind him a written work. The doxographers do not give very much; note a σημεῖον A 4.4. The quotation in Sen. Qu. Nat. 6.12.1 (A 16a) has a curious narrative style that does not sound to me authentic.

²¹ The report in A 3 and the two fragments (if they are not mere apophthegms) suggest an accumulative and rather »gnomic« style.

²² For his style, cf. RUDBERG, Symb. Osl. 22, 1942, p. 1–7; SCHMID, Gesch. d. griech. Lit. I.2 p. 724–725.

Of the controversial fragments attributed to *Philolaos* (Vors. 44), B 1—7, 13, and 17 are likely to come from a tract written in the early treatise style.²³ The elaboration and structure of the reasoning in B 2 is particularly worth notice, as the fragments at the same time show a tendency to solemnity, accumulation, and antithesis (B 6). The physiology of B 13 (and A 27, if it refers to the same work) is even less «technical» than the corresponding passage in Diogenes. It may be noted in this connection that the fragments of the tracts of Archytas (Vors. 47), which were written in the 4th century, are more markedly rhetorical and at the same time technical, and thus they correspond to some of the Hippocratic treatises (below, p. 110).

The atomists present different stylistic problems. We may disregard Leukippos (Vors. 67), who has completely lost his literary individuality. It is hard to make stylistic generalizations from the extant fragments of *Demokritos* (Vors. 68) because of the limitations of the material available, and because Demokritos had a reputation as a stylist almost comparable with that of Plato (A 34). The only authentic texts of which there are substantial remains are the ethical writings.²⁴ They contain very little argumentation, and frequently they have a gnomic touch (e.g. B 191, 235, 252, 265, 297) and a marked bent towards expressiveness and accumulation; it is tempting to postulate a direct connection with the old Ionian gnomic tradition²⁵ rather than with the early treatise style. The remains of the physical writings are largely personal, sometimes indignantly polemical: Diog. L. 9.41, B 5; B 116, 159, 165 (possibly the opening of the *Μικρός διάκοσμος*). B 164 is interesting for its extensive argument from a comparison introduced by *καθάπερ ὄρᾶν πάρεστιν*, together with very considerable accumulation and paronomasia.

²³ For a survey of the «Philolaic question» up to 1961, see H. THESLEFF, «An introduction to the Pythagorean writings of the Hellenistic period», Acta Ac. Aboensis Human. 24.3, Åbo 1961, p. 41—45. Recently BURKERT, *Weisheit u. Wiss.*, p. 222—256 has put forward new arguments in defence of the fragments considered here. But the use of Doric prose Koiné in the fragments is still in my opinion rather remarkable (in spite of BURKERT p. 207; cf. THESLEFF, *Introd.* p. 93). Also the fact that the tract was evidently intended for publication contradicts the view current since the late 4th century (A 8; cf. Vors. 14.17, 31 A 1.55) that Philolaos had simply propagated secret Pythagorean *ὑπομνήματα*; this view seems to explain the fathoming of spurious material upon him and partly account for the confusion of the doxography. The Philolaic question remains a question.

²⁴ The *ὑπομνήματα* B 298 b—299 h are undoubtedly spurious, though B 299 may be a stylistic pastiche; other spuria are listed by DIELS B 300—309, and under C.— The ethical fragments are B 1 b—3, 32—33, 35—115 («Demokrates»), 169—297.

²⁵ It is significant that Demokritos, like Gorgias, has been thought to depend stylistically on Herakleitos (NORDEN, *Kunstprosa I* p. 22; recently again S. LURIA, *Das Altert.* 9, 1963, p. 195 ff.). Some observations on the style of Demokritos will be found in HABERLE, *Unters.* p. 10—11, 17—19, 30—34, and SCHMID, *Gesch. d. griech. Lit.* I.5 p. 324—328, whose reference to the «scientific» character of Demokritos' style is somewhat misleading.

Even in his scientific and mathematical (B 11 b—11 q, 11 r—15 b) and »technical» writings (B 26 b—28 c) Demokritos seems to have retained a remarkably personal approach; see B 13, cf. also B 155 (155 a).²⁶ It is possible that all these writings approximated to the early treatise style, though on the whole it is rather tempting to associate them with the protreptics of the sophists (below, p. 100). At any rate a connection with the early treatise style seems probable for the epistemological works (B 5 i—8, perhaps add 167; 9—10, add 125; 11) with their devices for argumentation such as *γιννώσκειν χροή, δηλοῖ οὔτος ὁ λόγος*. It may also apply to the *Π. φύσεως* of *Metrodoros* (Vors. 70), though in B 1 of this author the emotional force displayed by accumulation and paronomasia is almost excessive. And as *Xeniades* (Vors. 81) held similar views about the impossibility of knowledge, he may possibly have employed a similar style.

The style of the rest of the 5th century philosophers, apart from that of the sophists, is wholly obscure to us.²⁷

The influence of oratory

When considering what influence o r a t o r y may have had upon the early treatise style, we can state first of all that argumentation took a prominent part in oratory from the very beginning.²⁸ Examples of somewhat advanced argumentation already occur in the dispute between Apollo and Hermes in the Homeric Hymn to Hermes (261 ff.) and in the trial of Orestes in Aischylos' *Eumenides* (397 ff.; 458 B.C.). In fact the latter passage, as Aly²⁹ has shown, also reflects the practice of Athenian (and possibly Syracusan) judicial oratory in matters of arrangement and phraseology. In the speech of Apollo the different sections are clearly marked: *λέξω* 614, *εἴρηται* 636, *καὶ τοῦτο λέξω* 657; note in particular *τεκμήριον δείξω* 662. This corresponds to the discussion of the parts of a forensic speech and of probability in the handbooks of Korax and others (cf. Plat. *Phdr.* 266 d ff., Arist. *Rhet.* 1354 b. 17 ff.,

²⁶ Or does Plutarch here merely report Chrysippos' version? As a matter of fact the fragment is not in Ionic.

²⁷ Boidas (Vors. 34), Oinopides (Vors. 63), Idaios (Vors. 63), Antisthenes the Heraclitan (Vors. 66) who may belong to the middle of the 4th century, and Diogenes of Smyrna (Vors. 71).

²⁸ A lucid, yet comprehensive discussion of oratory, with extensive references, will now be found in G. KENNEDY, *The art of persuasion in Greece*, Princeton 1963; see p. 36—40 on oratory in Homer and Hesiod.

²⁹ *Formprobleme* p. 33—44.

1402 a. 3 ff.).³⁰ A special characteristic of classical oratory from about 435 onwards is known to have been the antithetic arrangement of words and clauses,³¹ but it has not left very remarkable traces in the early treatise style. Probably extended argumentation and a clear order of ideas were developed by oratory long before pointed antitheses were in general use.

Extended argumentation and careful ordering can be studied in all the extant pieces of Gorgian and early Attic oratory.³² The reasoning abound in *topoi* such as *σημείον*, *τεκμήρια*, *μάρτυρα πιστόν*, *δείξας τάληθές*; and arguments from impossibility and *εἰκός* are common. The indirect report by Sextus of *Gorgias' II. τοῦ μὴ ὄντος* or *II. φύσεως* (Vors. 82 B 3) with its mass of concentrated and strict epistemological reasoning, is particularly interesting from the present point of view; but perhaps, as in the case of Zenon, it is here a question of a specimen of a method rather than an actually published work. As for the structure of the exposition, devices such as *πρῶτον . . . δεύτερον . . . τρίτον* are likewise common; and the transitions are usually clearly marked, in Gorg. Pal. e.g. *σκέψασθε κοινῇ καὶ τάδε* 13, *πρὸς δ'* 28, *λοιπὸν δέ* 33.³³ A marked, mostly antithetical systematization of thought within brief units was cultivated to the point of mannerism by Gorgias and his school; cf. also the periods of *Thrasymachos* (Vors. 85, esp. end of B 1).

Thus the traces of reasoning and the systematic, or at least pointed, structure that can be seen in early treatise style, suggest influence from contemporary oratory. The details cannot be worked out here, but as a further general argument for such a connection it has to be emphasized that the usual way of publishing one's opinions in the 5th century was reading them aloud to an audience. If ever a single person can be assumed to have »invented« the early

³⁰ The fragments in *Artium scriptores*, hrsg. v. L. RADERMACHER, Sitz.ber. d. Österreich. Ak. d. Wiss., Philos.-hist. Kl. 227.3, Wien 1951, p. 28 ff. Cf. KENNEDY, *Art of persuasion* p. 52—70; on the structure of speeches, VAN GRONINGEN, *La Compos. litt.* p. 236—246; cf. also FUHRMANN, *Das syst. Lehrb.* p. 11—28, 122—142.

³¹ E.g. Protagoras, *Pl. Prot.* 337 a; this tendency is very typical of Antiphon, Thucydides, and Gorgias and his school. Cf. SCHMID, *Gesch. d. griech. Lit.* I.3 p. 87—89; KENNEDY, *Art of persuasion*, p. 33—34.

³² Antiphon the Rhamnusian (cf. p. 101), Thucydides (cf. p. 103), Andokides, Lysias, and Antisthenes. For more shadowy orators such as Lykophron (cf. Vors. 83) and Theramenes the material collected by RADERMACHER in *Artium scriptores* should be consulted; for Archinos, cf. below p. 103.

³³ C. P. SEGAL, *Harv. St. in Cl. Philol.* 66, 1962, p. 99—155 attaches very much, and probably excessive, importance to the personal achievements of Gorgias in systematization and argumentation. The view that a pointed structure is not necessarily systematic and that logical systematization was developed later than pointed structure, is stressed by ALY, *Formprobleme* p. 71 n. 76. The matter clearly needs a thorough investigation.

treatise style it was Anaxagoras, who succeeded (and failed) so notably with the oratory-stricken Athenians. It is also particularly noteworthy that Zenon was an orator rather than a writer, and that Parmenides gives his reasoning in a speech (and cf. the *δείξω δὲ κέλευθον* in Xenophanes, Vors. 21 B 7). »Scientific« reasoning and arrangement of thought, according to the evidence so far discussed, appear to have arisen in public debate.

Early historiography

The logographers and geographers cannot a priori be expected to offer much illustration of the early stages of »scientific« style. The narrative parts, though gradually leaving the archaic solemnity of Pherekydes of Syros and Akousilaos, on the whole preserve the characteristics of myth or storytelling. The aetiology, which is sometimes etymological, and the occasional traces of allegoric explanation,³⁴ usually include no complicated argument. But the growing rationalism is reflected in the *εἰκός* requirement which occurs from Hekataios onwards.³⁵ In Herodotus, but not before him, there can be found various patterns of structure and reasoning that suggest the influence from oratory.³⁶ Thucydides will be considered in connection with the sophists (p. 103). — The catalogues and descriptions of early historiography offer material of a different kind which is of some interest here. The catalogue of course has very ancient traditions in literature. The development of stereotyped patterns, reflecting a tendency to systematization, can be studied in the Homeric Catalogue of Ships (Il. 2. 494—760) as well as in

³⁴ Etymological aetiology: Pherek. Syr. Vors. 7 B 1, Hekat. FGrH 1 F 15, Hellan. FGrH 4 F 19 b, 123, Xanthos FGrH 765 F 15, Armenidas FGrH 378 F 6, Andron FGrH 10 F 4, 7; Hdt. 1.43, 1.57, 1.142, 5.68, etc. Allegory: Stesimbrotos FGrH 107 T 3—4, F 21—25 (in F 23 there occur traces of more elaborate argument), Herodoros FGrH 31 F 13, Anaximandros the Younger FGrH 9 T 3.

³⁵ The famous opening of his mythological work seems to imply this (FGrH 1 F 1 a): *Ἐκαταῖος Μιλήσιος ὧδε μυθεῖται· τάδε γράφω, ὡς μοι δοκεῖ ἀληθῆα εἶναι· οἱ γὰρ Ἑλλήνων λόγοι πολλοί τε καὶ γελοῖοι, ὡς ἐμοὶ φαίνονται, εἰσίν.* Antiochos of Syracuse uses a similar opening, FGrH 555 F 2; note here the rather more rhetorical *πιστότατα*. Examples of a more or less explicit argument from probability can be found in Hekat. FGrH 1 F 19, 27, Hellan. FGrH 4 F 31, 168 a (cf. SCHMID, *Gesch. d. griech. Lit.* 1.2 p. 684 n. 11), Herodoros FGrH 31 F 22 a; and quite often in Herodotus, see the material in SCHMID 1.2 p. 572—575, 626—627, 629, 643.

³⁶ Note expressions such as *δηλοῦν* and *τεκμαίρεσθαι* (1.57), *ἀνάγκη* (1.137), *πείθεσθαι* (1.8), conditional argument (1.4), etc. Cf. SCHMID (the passages recorded in the preceding note), and the discussion and references in KENNEDY, *Art of persuasion*, p. 43—47. It is customary to refer to the possible influence of sophists upon Herodotus, but I think the practice of early oratory will account sufficiently well for these phenomena.

the genealogical catalogues with their recurrent formulae.³⁷ A somewhat similar systematization was brought about in geographical description, in particular in the style of the periegesis (periplous) which is fairly clear to us from *Skylax* (FGrH 709) and *Hekataios* (FGrH 1) onwards.³⁸ In origin these descriptions probably served practical purposes and they preserve a hypomnematic character. They tend to concentrate on certain typical facts, such as the names of people, mountains, and vegetation. The stylistic patterns of the early texts are very monotonous, with leading nouns with participles in apposition and descriptive adjectives, and frequent anaphoric repetitions, as e.g. *Hekataios* F 207 ἐς μὲν τοῦτο ἢ Βεχειρικὴ, ἔχονται δ' αὐτῶν Χοί . . . μέχρ' αὖ μὲν τούτων Χοί. Χοῖσι δ' ὁμοῦρέουσι πρὸς ἥλιον ἀνίσχοντα Δίζηρες, F 292 a Πάρθων πρὸς ἥλιον ἀνίσχοντα Χοράσμοι οἰκοῦσι γῆν, ἔχοντες καὶ πεδία καὶ οὖρεα· ἐν δὲ τοῖσιν οὖρεσι δένδρεα ἐνὶ ἄγρια, ἄκανθα κυνάρα, ἰτέα, μυρική.³⁹ Herodotus animated this style with a personal approach, imagery, and other devices of narrative, and evidently he was more interested than his predecessors in ethnographical detail; but occasionally his geographical descriptions are strict and systematic, e.g. 2.6—9, 5.52—54. We shall return below (p. 105) to the technical style.

Laws

In the 5th century the style of legal texts is also likely to have contributed to systematized and exact expression in prose. Sometimes the extant specimens have a remarkably clear and pointed structure of thought, e.g. Buck² 59 (Ozol. Locr., early 5th century) . . . ἐπινομία δ' ἔστω γονεῦσιν καὶ παιδί· αἱ δὲ μὲ παῖς εἶε, κόραι· αἱ δὲ μὲ κόρα εἶε, ἀδελφεῶν· αἱ δὲ μὲ ἀδελφεὸς εἶε, ἀνχιστέδαν ἐπινεμέσθω καὶ τὸ δίκαιον· αἱ δὲ μὲ, . . . , 117 I. 14 ff. (Laws of Gortyn, 5th century) . . . αἱ δὲ κα μῶλεϊ ὁ μὲν ἐλεύθερον, ὁ δὲ δῶλον, κάροταναν

³⁷ Such as *μίσγεται* e.g. Akousil. FGrH 2 F 22, Hekat. FGrH 1 F 21.

³⁸ The *Περίπλους* attributed to Skylax, GGM 1 p. 15—96, is a later (middle 4th century?) compilation though evidently traditional in style. Cf. further Phileas the Periegete, Macrob. Sat. 5.20.7; the so-called Anonymus Avieni (see ALY, Formprobleme p. 51—52); Hanno, GGM 1 p. 1—4 (though this is a translation from the Phoenician original); Ps.-Skymnos, GGM 1 p. 196—237 (though in iambs). For this genre as a whole, see R. GÜNGERICH, »Die Küstenbeschreibung in der griechischen Literatur«, Orbis Antiquus 4, Münster 1950, who (p. 7) suggests that already the author of the Odyssey knew of such writings.

³⁹ H. FRÄNKEL, Dicht. u. Philos. p. 446, calls this type of prose »atomistic»; ALY, Volksmärchen, Sage und Novelle bei Herodot, Göttingen 1921, passim, and Formprobleme, esp. p. 45—46, calls it »scientific». See also the analysis of Hekataios' style by JACOBY, RE VII, 1912, col. 2748—2752.

ἔμεν [ἄτερο]ί κ' ἐλεύθερον ἀποπώνιδντι. αἰ δέ κ' . . . For the use of the elliptic formula εἰ δὲ μή, cf. e.g. Buck² 17.29, 52. C. 15, 57.19, 84.6. Since the chronology is for the most part unclear, it is impossible to determine whether exact legal style appeared earlier than exact technical prose.⁴⁰ It can be assumed that legal style had developed a tradition of its own which extended its influence remotely to other prose genres.

The sophists: protreptic and pamphlet style

It is important to note that the teaching of the sophists was primarily oral and protreptic. It applied the oratorical practice of persuasion to a wide variety of subjects, and hence stylistic and compositional features typical of oratory, such as emotional tone, devices of reasoning, and a pointed structure, can be expected to occur in all texts produced by sophists or influenced by them. As a matter of fact both *Protagoras* (Vors. 80), *Gorgias* (see above), *Prodikos* (Vors. 84), and *Hippias* (Vors. 86, FGrH 6) seem to have had an inclination to pompousness and stylistic amplification which at once differentiates their prose from a strict »scientific« style. The lack of direct quotations from the sophists is somewhat compensated for by references and parody in Plato. In particular the speech following the myth of Protagoras in Pl. Prot. is a magnificent pastiche of a sophistic logos; note e.g. 323 c ὅτι μὲν οὖν πάντ' ἄνδρα εἰκότως ἀποδέχονται περὶ ταύτης τῆς ἀρετῆς σύμβουλον διὰ τὸ ἠγεῖσθαι παντὶ μετεῖναι αὐτῆς, ταῦτα λέγω· ὅτι δὲ αὐτὴν οὐ φύσει ἠγοῦνται εἶναι οὐδ' ἀπὸ τοῦ αὐτομάτου, ἀλλὰ διδακτόν τε καὶ ἐξ ἐπιμελείας παραγίγνεσθαι ᾧ ἂν παραγίγηται, τοῦτό σοι μετὰ τοῦτο πειράσομαι ἀποδείξαι, cf. 324 d.⁴¹

Unfortunately very little is known about Protagoras' and Prodikos' studies of language, which probably influenced educated language and contributed to

⁴⁰ CARLA SCHICK, Riv. di filol. 33, 1955, p. 387–390, thinks that Doric inscriptions are the first to show a tendency to exact style. ALY has argued (Formprobleme, p. 8–29) that the extant fragments of the Laws of Drakon (Ditt. Syll.³ 111, supplemented by some passages in Demosthenes, esp. speeches 23 and 43) reflect essentially the original text, and that their disposition is considerably less systematic than that of the poems and (consequently) of the Laws of Solon, who thus would be the founder of later systematic law-style. However this may be, the Draconic fragments have already some noteworthy stylistic details that appear to be typical of Greek legal style of all ages, such as the accumulation of alternatives or variants (fr. 3, 7), and a structure by means of ἔάν, μὲν — δέ, and μή (e.g. fr. 3–5).

⁴¹ For Protagoras see further e.g. Pl. Prot. 315 a, 329 b, Theaet. 161 c, 166 d; cf. B 4, 9. For Prodikos see Xen. Mem. 2.1.21 ff., esp. 34 (B 2). For Hippias see the parodies in Plato (esp. A 7, 9, C 1. On protreptics of the sophists, cf. K. GAISER, Protreptik (Tüb. Beitr. 40), 1959, p. 25.

clarity of expression and definition (cf. SCHMID, *Gesch. d. griech. Lit.* I. 3 p. 38). Some of the testimonia of the former (cf. A 1.53; A 26, 29) suggest a use of abstract nouns and adjectives, a feature to which we shall return below (p. 104f.).⁴² As he concerned himself with various technical branches (cf. below p. 106) he is likely to have made use of special terminology for practical and perhaps theoretical purposes. The encyclopedic activities of Hippias included mathematics and astronomy (A 11); but there is no reason to think that he abandoned his rhetorical approach when dealing with such subjects in public. However, his list of Olympian victors (B 3) must have been simply a catalogue.

Antiphon the Sophist (Vors. 87), whether to be distinguished from the Rhamnusian orator or not,⁴³ is known from fragments of considerable extent most of which come from the philosophical tract *Ἀλήθεια* and a more popular logos called *Π. ὁμοιοίας*. The latter is conspicuously, though not pointedly, rhetorical. The *Ἀλήθεια* (B 1—44), on the other hand, is an example of early treatise style. A specifically sophistic feature may be seen in the abundant abstract nouns and neologisms quoted by the lexicographers from Antiphon; cf. B 44 A col. 5.27 ff. (*ἐπικούρησις, ἐλάττωσις*) and the medical fragment in Galenos. It is uncertain whether the geometrical demonstration B 13 was included in the *Ἀλήθεια*, and if so, what form it took. The clear and simple Attic of *Kritias* (Vors. 88, cf. A 1, A 17—20) was admired in later times; but obviously this did not imply strict matter-of-factness or lack of emotion. All the prose fragments are rhetorical and display considerable pathos. Like Antiphon, *Kritias* seems to have been fond of neologisms and technical terms.

The so-called Anonymus Iamblichi (Vors. 89) is probably a typical specimen of a protreptic sophistic logos with its combination of argumentation and accumulative force (e.g. 6.2—5).⁴⁴ The *Dissoi Logoi* (Vors. 90), probably written in the first years of the 4th century (1.8), are considerably different. Apart from the Doric dialect⁴⁵ this tract has an extremely simple style without ornament and without any definite amplificatory inclinations. Yet it is hardly

⁴² This practice is sometimes parodied in comedy, e.g. Ar. Nub. 317 f. Ar. Eq. 1377 ff. (the *-ικός* adjectives of a certain Phaiax).

⁴³ For a survey of the question, see A. LESKY, *Gesch. d. griech. Lit.* p. 333. In my opinion ALY's arguments (*Formprobleme* p. 105—172) for an identification are quite convincing. Cf. also J. S. MORRISON, *Proc. Camb. Philol. Ass.* 7, 1961, p. 49—58.

⁴⁴ The *Anonymus de legibus* ap. Ps.-Dem. 25. 15—35, for which POHLENZ (*Nachr. d. Ges. d. Wiss. zu Gött.* 1924 p. 19 ff.) suggested a 5th century Pythagorean environment, in its present stylistic form at any rate depends on 4th century rhetoric.

⁴⁵ Cf. THESLEFF, *Introd.* p. 93—94.

just an extract or an example of method, as was suggested above for Zenon and Gorgias B 3: the exposition is kept in the first person, the structure is to some extent systematized ⁴⁶ with a very marked antithetical arrangement, and the argumentation often has an affective tone (e.g. 2.26—27, 3.2—12, 5.6—9), though occasionally it lacks any definite emotion (4.6, 6.1—13, but cf. 7).⁴⁷ An interesting piece of primitive dialogue reasoning is found in 1.12—14, cf. 5.5—7. The tract is not a very remarkable intellectual achievement, but stylistically it seems to me to represent a tendency towards intellectualization and specialization not so manifest among the earlier sophists.

From about 440 onwards we know of the existence of many prose tracts on various non-philosophical subjects which more or less remotely reflect the activities of the sophists. They may be conveniently called *p a m p h l e t s*. They differ from the early treatise style in displaying more emotion and polemic, and less solemnity, and the character of the subjects dealt with entails special terminology to a varying degree. However, lack of material makes it impossible to draw a sharp distinction between the early treatise style and the pamphlet style; and it is uncertain whether the authors themselves felt the distinction to be very marked (though cf. Diogenes, above p. 94), except that the proper dialect of the former was Ionic, and that of the latter Attic.

Ps.-Xenophon, Ἐπιτομή Ἀθηναίων πολιτείας,⁴⁸ is the best-known example of the pamphlet style. It is generally agreed that this tract is »pre-rhetorical» and that the stylistic patterns found in it, such as repetition, alliteration, and antithesis, follow the traditions of early prose. However, I find it important to note that it corresponds to the practice of orators and sophists in its tendency to persuasion, its argumentation, and its systematized and pointed structure. As in the *Dissoi Logoi*, there are even traces of simple dialogue argument (*εἴποι δ' ἄν τις* 1.6, 1.7, 1.15, cf. 2.11). Among the transitional devices section-ending does not occur; but note introductory *περὶ δὲ* 1.14. The passage 1.16—2.13 reflects a fairly advanced systematization. Further the large use

⁴⁶ Note the section-ending in 1. 15—17, cf. 2.23, 3.15, 6.13, 9.5, and devices such as *πειρασεῦμαι* 2.2, *δείξω* 5.13; the *πρῶτον-δεύτερον* type 3.2, 4.2, 5.2, 8.2, cf. 6.2—6, 9.1—4; *ἄλλο* 3.14, 9.5.

⁴⁷ Note *δᾶλον* (*δηλον*) 4.5, 4.6, etc.; *σαμεῖον* and *τεκμᾶριον* 6.9; cf. *γνώτω ἐκ τῶνδε* 6.12 and the *δείξω* 5.13.

⁴⁸ The date accepted by most scholars is 424 B.C. or thereabouts, though some have argued for a date before 431 (see RUDBERG, *Eranos* 40, 1942, p. 139, and LESKY, *Gesch. d. griech. Lit.* p. 430). On the style of this pamphlet, see ALY, *Formprobleme* p. 61—63, SCHMID, *Gesch. d. griech. Lit.* I.3 p. 154—155, and RUDBERG l. c.

of political and other terms is noteworthy. — No other specimens are extant of 5th and early 4th century political pamphlets.⁴⁹

There appear to have existed several monographs on poetry and grammatical matters. Apart from some early allegorists who probably followed the logographic tradition,⁵⁰ the following are known: Damastes, *Π. ποιητῶν καὶ σοφιστῶν* (FGrH 5 T 1, F 11), possibly logographic; Metrodoros of Lampskakos (Vors. 61), *Π. Ὀμήρου*, probably an allegorical and grammatical pamphlet; Glaukos (Glaukon?) of Rhegion (FHist.Graec. II p. 23 f.), *Π. τῶν ἀρχαίων ποιητῶν*, possibly a similar pamphlet;⁵¹ Polos, *Π. λέξεως* (FGrH 7), probably a pamphlet; Archinos, On the Ionian alphabet (403 B.C.; SCHMID, *Gesch. d.griech. Lit.* I. 3 p. 143 with references), possibly a speech; Nessas the Democritean (Vors. 69), etymological explanations of Homeric words, possibly a pamphlet; Antidoros of Kyme, *Π. Ὀμήρου καὶ Ἡσιόδου* (see SCHMID, *Gesch. d. griech. Lit.* I. 2 p. 694), probably a pamphlet.

Sophokles is reported to have written a polemical prose pamphlet on the chorus (Suid. s.v. *Σοφοκλῆς*). Damon (Vors. 37) On music should probably be regarded as a speech (B 2); its personal and affective character is beyond doubt. A polemical tone is also present in the Anonymous fragment on music, Hibe Pap. I. 13.⁵²

Thucydides

Thucydides' dependence on the sophists in matters of thought and style is obvious. Devices such as the pointed antitheses especially in the speeches,

⁴⁹ Stesimbrotos (cf. above p. 98 n. 34) does not seem to have written a pamphlet, as is often assumed, but a collection of anecdotes. The contents (but not the style) of Polykrates' pamphlet against Sokrates can be partly reconstructed from Xen. Mem. 1.2. Thibron (FGrH 581) on the Spartan constitution is even more obscure to us.

⁵⁰ Theagenes of Rhegion (Vors. 8), who lived at the end of the 6th century, is said to have been the first allegorist. Whatever may be the truth about him, he is not likely to have published his interpretations as a »treatise» or a »pamphlet». Stesimbrotos and Anaximandros the Younger were mentioned above (p. 98 n. 34).

⁵¹ If the Glaukon mentioned in Pl. Ion 530 c is identical with Glaukos, the work was apparently allegorical. Schol. Pl. Phd. 108 d refers to a grammarian Glaukos of Samos, for whom see also Varro, *Gramm. fr.* 282, GRF p. 302 Fun.; but the identification of this Glaukos with the rest is very doubtful.

⁵² Early 4th century? Cf. *New Chapters*, ed. by POWELL—BARBER, 2 p. 181—183, SCHMID, *Gesch. d. griech. Lit.* I.2 p. 734. — It is unclear whether there ever existed writings by Hippodamos and Phaleas (Vors. 39); at any rate the compiler of *Ps.-Hippodamos ap. Stob.* 4 p. 28—36, 846—848 He., which partly corresponds to Aristotle's account, evidently did not know of any authentic texts. Thrasyalkes of Thasos (Vors. 35) and Simonides the Younger (FGrH 8) are also quite obscure.

their antilogical arrangement, and the occasional »gorgianisms», emphasize this dependence. The speeches abound in argumentation.

The use of argument outside the speeches is worth special observation. When discussing historical testimonies, Thucydides sometimes, in particular in the beginning of his work and in various digressions, uses devices of argumentation which are familiar from oratory or at least appear to be variations of such expressions; e.g. 1.1.2 *ἐκ δὲ τεκμηρίων ὧν ἐπὶ μακρότατον σκοποῦντί μοι πιστεῦσαι ξυμβαίνει*, 1.3.1 *δηλοῖ δέ μοι καὶ τόδε*, 1.3.3 *τεκμηριοῖ*, 1.6.2 *σημεῖον δ' ἐστί*, 1.6.6 *πολλὰ δ' ἂν καὶ ἄλλα τις ἀποδείξειε*, 1.8.1 *μαρτύριον δέ*, cf. further 1.9.3, 1.9.4, 1.10.1, 1.10.3, 1.11.1, 1.13.5; 1.21—22, 1.97, on the critical method; 2.65.8; 5.20.2, 5.26.2; 6.2.2, 6.54.1, 6.54.7, 6.55.1, 6.55.2; 7.87.5. But contrary to rhetorical argument and the corresponding passages in Herodotus (cf. p. 98), these passages of argumentation are normally without an emotional or distinctly personal colouring. Rhetorical argumentation tends to become intellectualized in Thucydides.

In the structure and systematization of the exposition Thucydides displays his inclination to variation and lack of balance. It has been noticed⁵³ that the division into sections often gets less marked because of an addition of some kind; e.g. 1.20.1, partly resumed in 1.21.1, but not clearly contrasted with the new section 1.23. Conventional section-endings are normally found after speeches, and to mark the end of the year. In general lines the disposition is indicated in 1.23.5, cf. 1.97—146, 2.1, 5.26. The *πρῶτον — ἔπειτα* type of classification is not very common (e.g. 1.98—100, 5.58.3); but note the similar uses of *μάλιστα*, *μέγιστον*, and the like (e.g. 4.104.5, 1.142.1).

The use of technical terms is of course appropriate to the subject of the work and its approach. Thucydides' tendency to abstract expression has often been compared to the same tendency in the Hippocratics, and it is in fact possible to find a direct influence from medical style in the description of the plague, 2.47—54 (see e.g. 2.49.5) and occasionally elsewhere.⁵⁴ But essentially the mannerisms of his abstract style, in particular the wide use of abstract nouns and of substantival adjectives, are likely to be of a sophistic origin (cf. above, p. 101). This is underlined by the fact that the abstract style is much more common in speeches than in narrative or in discussions of method. Sometimes it is found outside the speeches, but usually with obvious pathos, as in the excursus on the moral decline of Greece, 3.82.4 *τόλμα μὲν γὰρ*

⁵³ ALY, *Formprobleme* p. 71 n. 76.

⁵⁴ Cf. W. NESTLE, *Hermes* 73, 1938, p. 28—31.

ἀλόγιστος ἀνδρεία φιλέταιρος ἐνομίσθη, μέλλησις δὲ προμηθῆς δειλία εὐπρεπής, τὸ δὲ σῶφρον τοῦ ἀνάνδρου πρόσχημα, καὶ τὸ πρὸς ἅπαν ξυνητὸν ἐπὶ πᾶν ἀργόν. This is a very typical passage. It is very important to note that fundamentally the abstract style of Thucydides is not »scientific« but gnomic. Perhaps the same applies to the early sophists.

Technai

It remains to survey the early technical writings known to us. Apart from various ὑπομνήματα and catalogues of different kinds there probably existed already in the late archaic age manuals on practical subjects, for which the denomination τέχνη is more or less appropriate. In at least two branches of human activity such handbooks were evidently needed, for navigation and in medicine (including pharmacology and magic); here the mass of information required in addition to purely practical skill was hard to memorize. Reference was made above (p. 99) to the periegeses, which strictly speaking are not τέχναι and which are for the most part lost; the remains, however, show a notable degree of technical systematization and concentration. Though the extant items of medical τέχναι are not very old, a similar tradition can be inferred from them; they will be considered below (p. 109). About the middle of the 5th century rhetorical τέχναι began to appear (above, p. 96 f.), but unfortunately nothing can be said about their style.

It is doubtful whether early Greek mathematical and astronomical discoveries were ever published as written texts of a more technical nature than the philosophical writings discussed above. The first mathematician reputed to have written a book of Στοιχεῖα was Hippokrates of Chios (Vors. 42). ALY⁵⁵ has argued that the record in Simpl. CAG 9 p. 60—69 Diels (now also in MARIA TIMPANARO CARDINI's Pitagorici, II, p. 42 ff.) closely reflects the original; at any rate there are some features that may indicate a dependence on early treatise style: τούτων δὲ οὕτως ἐχόντων p. 65 bis, φημί p. 65. But the exactness of the terminology and the strict matter-of-factness of the process of demonstration suggest that the author followed a special mathematical practice which it is tempting to connect with Pythagorean oral tradition. This is all, however, very hypothetical.⁵⁶

⁵⁵ Formprobleme p. 94 n. 97, cf. p. 144.

⁵⁶ Cf. above, p. 91. — The possible publications of Matriketas of Methymna (Theophr. De sign. temp. 4), Meton (Vors. 1⁸ p. 394, Ar. Av. 992—1020), Aischylos the pupil of Hippokrates of Chios (Vors. 42), and Theodoros of Kyrene (Vors. 43) cannot be stylistically reconstructed.

The influence of the sophists on technical writing hardly was of any importance. They were popularizers and propagators and are more likely to have made use of existing *τέχναι* than to have inspired the composition of such texts. It is doubtful whether Protagoras wrote special monographs on any of the arts with which he is said to have been concerned (Vors. 80 B 6—8).⁵⁷

A number of late archaic and early classical architects are reported by Vitruvius (7 Pr. 12) to have written on temple building: Chersiphron of Knossos and his son, Metagenes;⁵⁸ Theodoros of Samos;⁵⁹ and Iktinos, the builder of the Parthenon. Here we may be concerned with ancient oral traditions about practical matters, thought by a more literary age to derive from books. The same may be true of two painters, Agatharchos of Athens, who is also mentioned by Vitruvius,⁶⁰ and Pamphilos of Amphipolis.⁶¹ Kleagoras of Phleious, again, undoubtedly wrote a *τέχνη* of some kind, but the subject remains unclear.⁶² A certain Polemainetos is mentioned by Isokr. 19.5 as possessing *βύβλοι περὶ μαντικῆς*.

Plato (Gorg. 518 b) refers to the *᾽Οφραρτυτικός* of *Mithaikos* of Syracuse, and this is probably why Athenaios was able to quote a cooking recipe from it (7.325 f): *ταινίαν ἐκκοιλίξας, τὰν κεφαλὰν ἀποταμών, ἀποπλύνας καὶ ταμὼν τεμάχεια κατὰ χειρὶ τυρὸν καὶ ἔλαιον*. The construction of a series of participles in apposition to an imperative also occurs in some Hippocratic *τέχναι* (cf. p. 109). What is remarkable here is the Doric dialect. It may indicate a technical practice for local use in Syracuse, perhaps introduced or followed by Korax and Teisias. Another *᾽Οφραρτυτικός* was written by Philoxenos (Pl. Com. fr. 173.4 K.).

There are substantial fragments from the *Π. ἱππικῆς* of *Simon* of Athens,⁶³

⁵⁷ Cf. SCHMID, *Gesch. d. griech. Lit.* I.3 p. 29 n. 3. Pl. Soph. 232 de perhaps refers only to scattered statements. — FUHRMANN, *Das syst. Lehrb.* p. 122—142 argues that reasoning and systematization, as occurring in the *τέχναι* of Anaximenes (about 340 B.C.) and later authors, are a sophistic inheritance; he fails to see their pre-sophistic origins, because he had considered the early material very superficially.

⁵⁸ Cf. Vitruv. 3.2.7, Strab. 14.640, Plin. N.H. 7.125, 36.95—97.

⁵⁹ Cf. Hdt. 3.41. On the inventions of this Theodoros, see LIPPOLD, *RE* 5 A, 1934, col. 1917 ff.

⁶⁰ 7 Pr. 11 *primum Athenis Aeschulo docente tragoediam scaenam fecit et de ea commentarium reliquit*. A. RUMPF, *JHS* 67, 1947, p. 13, argues that this does not mean in the lifetime of Aeschylus; he dates Agatharchos in the end of the 5th century.

⁶¹ Plin. N.H. 35. 76—77, but perhaps to be dated in the middle of the 4th century.

⁶² Xen. An. 7.8.1 *ἐνοίκια, ἐν οἰκίῳ* Mss., *ἐντοίγια* ('wall-paintings') LEONHARD, *ἐνώπνια* WILAMOWITZ, HUDE, *ἐνώπια* ('façades') TOUP.

⁶³ Mentioned in Xen. R. Eq. 1.1 etc. The fragments were collected by F. RÜHL in his Teubner edition of Xenophon (*Scripta Minora* II, 1912, p. 193—197).

the first book on this subject (Plin. N.H. 34.76), written perhaps in the first decade of the 4th century. The style has a personal approach (*δοκεῖ μοι*, etc.), but it is very simple and compressed with minute descriptions of the qualities of a good horse; the language is technical and has a certain tendency to abstract expression; descriptive adjectives often occur in clusters attached to a noun; e.g. ἅ τὸν <δὲ> αὐχένα καὶ τὴν προτομὴν ὀρθὰ ἐχέτω, μὴ τὴν ἔκφυσιν ἀνάσιμον, εἰς <δὲ> τὴν ἀκρωμίαν ὡς παχυτάτην καὶ πλατυτάτην. παρὰ δὲ τὴν σιαγόνα ὁ αὐχὴν ἔστω λεπτός, ὑγρός, ἀνάσιμος εἰς τοῦπισθεν, . . . The structure is systematic (cf. e.g. 1, 2) though not particularly pointed (but note section-ending in 10). Explicit argumentation does not occur. Thus the style largely resembles that of the Hippocratic *τέχναι* (p. 109).

Aristotle (Pol. 1.11.1258 b) mentions Charetides of Paros and Apollodoros of Lemnos as authors of books *Π. γεωργίας*, but they may belong to the middle of the 4th century.⁶⁴ It may well be that Xenophon's Socratic *Οἰκονομικός λόγος* was the first writing to deal with this subject. This and the rest of the technical works of Xenophon, and the *Tactics* of Aineias, represent for us the 4th century *τέχναι* with their moderately consistent and wide application of the so-called scientific style.

The Hippocratics: aphorisms, hypomnemata, technai, treatises

The interrelations of »scientific» and »technical» style can be best studied in the Hippocratic writings. With a few exceptions representing distinctly different traditions,⁶⁵ they cover a stylistic range extending from strictly technical texts to rhetorical logoi with only a core of technical matter, through a great variety of intermediate types.

An aphoristic style is likely to have been current in medical schools at a very early date. In oral teaching it must have played a prominent part; cf. the »gnomic» style of Ionian philosophy. We have a collection of Hippocratic Ἀφορισμοί (*Aph.*, ed. LITTRÉ 4 p. 458) part of which may be very old; the collection opens with the famous ὁ βίος βραχύς, ἡ δὲ τέχνη μακροή. The aphorisms are normally technical and refer to particular circumstances, which differentiates them from maxims; quite often they have a clearly systematized

⁶⁴ Cf. Ps. - Pl. Min. 316^c where writings π. κήπων ἐργασίας are mentioned in addition to γεωργικὰ συγγράμματα.

⁶⁵ First part of Hebd., see below p. 111 n. 71; Jusj., cf. above p. 90 n. 3; Lex, 4.638 LITTRÉ, which gives instruction, as if for initiation, in a clearly rhetorical form; also the letters and documents, 9.312 L.

structure, e.g. 1.13 γέροντες εὐφορώτατα νηστείην φέρουσι, δεύτερον οἱ καθεστηκό-
τες, ἥκιστα μειράκια, πάντων δὲ μάλιστα παῖδια, . . . Sometimes they are
expanded (e.g. 1.2), and they may also include simple argumentation (e.g.
1.14). Occasionally they are more gnomic, like the introductory sentence
(further e.g. 2.4). *Π. ὀδοντοφυΐης* (*Dent.*, 8.544 L) is rather similar. *Π. τροφῆς*
(*Alim.*, 9.94 L) displays a more consciously gnomic style with »Heraclitan«
mannerisms such as repetition and antithesis (e.g. 40) and oxymoron (e.g.
45). But in some instances the aphoristic style is demonstrably due to excerpt-
ing from earlier writings, as in *Μοχλικόν* (*Mochl.*, 4.340 L) and *Π. ὑγρῶν*
χρήσιος (*Liqu.*, 6.119 L).

Some of the texts are predominantly h y p o m n e m a t i c. Among these
the case histories with remarks on external conditions collected in the *Ἐπι-
δημῖαι* (*Epid.*, Bks 1 and 3 ed. KÜHLEWEIN⁶⁶ I p. 180; Bks 2, 4—7, 5. 72 L.),
are evidently an early type of technical memoranda. The observations on
the climate and the physical environment in relation to health in Bk 1 are
in a very lapidary note-book style; the systematic structure is worth notice
in passages such as 1.10 ἔθνησκον δ' ἐκ πάντων μὲν, πλεῖστοι δ' ἐκ τούτων,
καὶ τούτων παῖδια, ὅσα ἀπὸ γάλακτος ἤδη, καὶ πρεσβύτερα ὀκταετέα καὶ δεκαετέα
καὶ ὅσα πρὸ ἥβης. The case histories abound in an asyndetic accumulation
of nouns and adjectives, many of them technical terms, occasionally with a
personal remark, and sometimes without syntactical consistency, e.g. 3.17.13
Ἀπολλώνιος ἐν Ἀβδήροις . . . τριηκοστῇ τετάρτῃ ἔθανε. τούτῳ διὰ τέλους, ἐξ
οὔ καὶ ἐγὼ οἶδα, κοιλίη ταραχώδης, οὔρα λεπτὰ μέλανα, κωματώδης, ἄγρυνπος,
ἄχρεα ψυχρά, παράληρος διὰ τέλους. Such observations could be generalized
to make prognostic doctrines. This is illustrated by the first book of the
Προρρητικόν (*Prorrh.* 1, 5.510 L) and the *Κωακαὶ προγνώσεις* (*Coac.*, 5.588 L)
which both consist of collections of descriptions of symptoms with a prognostic
remark, as *Prorrh.* 1.86 φάρυγξ ἐπώδυνος, ἰσχνή μετὰ δυσφορίας, πνιγώδης·
ὀλεθρὴ ὀξέως. When the prognosis is not certain it is put as a question,
e.g. *ibid.* 118 ἄρά γε καὶ λύεται τὰ τοιαῦτα σπασμῶ; The connection with the
case histories is shown by occasional references to cases, as *ibid.* 119 οἱ ἐν
ὑστερικαῖσιν ἀπύρως σπασμοὶ εὐχερέες, οἷον καὶ Δορκάδι. The *Κνίδιαι γνῶμαι*
mentioned in *Hp. Acut.* 1.1 appear to have been of this type.⁶⁷

⁶⁶ For practical reasons reference will be made only to the editions of LITTRÉ and KÜHLEWEIN (Teubner).

⁶⁷ It is not known whether, and to what extent, they occur in the extant Hippocratic writings. The Cnidian physician Euryphon has sometimes been regarded as the author of

These two main types of writings serve a purely practical purpose: the first broadly speaking aims at instruction and therapy; the latter principally aims at description, diagnosis and prognosis. In both main classes we notice a use of special terminology, a remarkable concentration, and (except in the gnomic passages) a fairly advanced precision, matter-of-factness, and lack of emotion. It is also an important fact that such abstract expressions are clearly terminological. Sometimes a tendency to systematization is noticeable within brief units, but the structure of the composition as a whole is loose and not pointed (as in the treatise and pamphlet styles). Argumentation does not occur, except occasionally as additional remarks in quite simple forms.

The patterns of description and instruction appear to have been combined and further developed in a group of writings which can be conveniently called *τέχναι*. Here the exposition is coherent, or at least systematic, and tends to have a slightly literary character, though distinctly rhetorical devices and advanced argumentation do not occur. One of the writings of this group includes no instruction at all: the *Π. ὀστέων φύσιος* (*Oss.*, 9.168 L). It consists of a detailed physiological description, partly in a very compressed hypomnematic style, with a notable degree of systematization, e.g. *3 τὸ μὲν ἄνωθεν μηροῦ· τὸ δὲ κάτωθεν ἐπὶ τὰ γούνατα, ἐντεῦθεν γούνατι ξυνταθὲν ἐπὶ τένοντα, πτέρναν, πόδας· τὸ δὲ ἐς περόνην· ἄλλα δ' ἐς τοὺς νεφρούς*. But there occur some personal remarks (e.g. *ἐγὼ δηλώσω* 11). Some other *τέχναι*, again, contain mainly instruction: *Π. διαίτης ὑγιεινῆς* (*Salubr.*, 6.72 L), *Π. συρίγγων* (*Fist.*, 6.448 L), and *Π. αἰμορροΐδων* (*Haem.*, 6.436 L). Among these the *Salubr.* represents a somewhat different (older?) stylistic type: the instruction is mostly given by means of *χρή*, *συμφέρει*, etc., and infinitives; the material is clearly differentiated by means of relative clauses, often with a correlative in the main clause (*ὁκόσοισι — τούτοις*, and the like), and *ᾧδε*. In the *Fist.* participles in apposition and imperatives alternating with infinitives are used in instruction; *ἦν* and *ὅταν* are used in qualifications; and the *πρῶτον — ἔπειτα* device occurs from time to time (e.g. 2—3). The *Haem.* combines all these features. In the most typical *τέχναι* both description and instruction occur. The *Π. τῶν ἐν κεφαλῇ τρωμάτων* (*V.C.*, II.1 Klw.) is a good example, though the sentence structure indicates a fairly late date; extensive periods are found e.g. in 14. The opening description is strictly matter-of-fact and systematic (note *ᾧδε* and the emphatic position of the quality to be discussed in 2, cf.

these *γνώμαι*. See now LONIE *Cl. Q. N. S.* 15, 1965, 3. — For the hypomnematic style, cf. DILLER, *Arch. f. Begr. gesch.* 9, 1964, p. 133—150.

4 etc.), though not aphoristic; 4—8 enumerates different kinds of wound in a numbered order (*δεύτερος οὗτος τρόπος* 5, etc.). Treatment is discussed from 10 onwards, beginning with *πρῶτον* and *χρή*. Both *ἦν* and relative clauses are used in making qualifications. *Π. τῶν ἐντὸς παθῶν* (*Int.*, 7.166 L) is similar, though less systematic; cf. further *Π. ἐλκείων* (*Ulc.*, 6.400 L), *Π. ὄψις* (*Vid. Ac.*, 9.152 L), *Κατ' ἰητροῦ* (*Off.*, II.30 Klw.) which gives very detailed definitions, with a tendency to aphorisms and some stylistic sophistication (e.g. 8), *Π. χυμῶν* (*Hum.*, 5.476 L) which is rather more hypomnematic with extensive lists of symptoms, *Π. διαίτης ὀξέων* Bk 2 (*Acut.* 2, I.146 Klw.), *Π. νούσων* Bks 2—3 (*Morb.* 2—3, 7.8 L), *Γυναικειᾶ* Bks 2—3 (*Mul.* 2—3, 8.234 L), *Π. ἐπικνήσιος* (*Superf.*, 8.476 L), and *Π. ἐγκατατομῆς ἐμβρύου* (*Foet. Exsect.*, 8.512 L). Cf. also *Π. ἑπταμήνου* (*Septim.*, 7.436 L) and *Π. ὀκταμήνου* (*Oct.*, 7.454 L) which include some argumentation (e.g. *Oct.* 13) and hence come close to the next type.

A fair number of the Hippocratic writings combine technical description and instruction, as above, with more markedly rhetorical features. Though there is considerable variation within this last type, it may be called *treatise* as a general name. None of the Hippocratic treatises appear to be really 'popular' and primarily intended for laymen, though some certainly do not neglect the public. They all preserve a technical character to a varying extent, and the technicalities of subject-matter and terminology in fact constitute the most obvious points of difference from the early treatise style of the philosophers. As compared to the latter, however, all the medical treatises have a certain smoothness and elegance of style that must be due not merely to differences of environment and personal qualifications, but also to their date: it cannot be doubted that the standard of the Hippocratic treatises is later than the standard of Anaxagoras and Diogenes of Apollonia. A typical example of such a 'technical treatise style' is the famous *Π. ἀέρων ὑδάτων τόπων* (*Aër.*, I.31 Klw.), with its geographical approach. Here the highly systematic and pointed structure should be noted (see e.g. 3, beginning with *ὅπως δὲ χρῆ ἕκαστα . . . , ἐγὼ φράσω σαφέως*). Various devices of explicit argumentation are used (e.g. 8 *δῆλον δέ, τεκμήριον μέγιστον*, and towards the end of the same paragraph, *γνοίης δ' ἂν ὧδε, τοῦτο τεκμήριον, οὐ γὰρ ἂν δύναίτο*, and concluding *ταύτη οὖν*). Though the language is in part highly technical and abstract (e.g. 10) it sometimes slips back into the emotional tone proper to the early treatise style and has examples of accumulation and assonance (e.g. 23, latter part). The *Π. σαρκῶν* (*Carn.*, 8.584 L)

is somewhat similar. It is quite personal and includes much argumentation; here the philosophical point of view is noteworthy. *Π. ἰερῆς νόσου* (*Morb. Sacr.*, 6.352 L) with its polemical attitude approximates in my opinion rather to the sophistic pamphlet style (above, p. 102 f.).⁶⁸ *Π. νόσων* Bks 1 and 4 (*Morb.* 1, 4; 6.140, 7.542 L), like the *Aër.*, discusses general principles and conditions, and its style has a somewhat mannered inclination to antithesis and accumulation. — In two writings the technical language is highly advanced, but the rhetorical features, though not so prominent, are none the less present: *Π. ἄρθρων ἐμβολῆς* (*Art.*, II. 111 Klw., techn. e.g. 9 ὑποτιθέναι δ' ἐς τὴν μασχάλην εἴριον μαλθακὸν καθαρὸν συνελίσσοντα, ἐκπλήρωμα τοῦ κοίλου ποιέοντα, ἵνα ἀντιστήριγμα μὲν τῆ ἐπιδέσει ᾗ, ἀνακωχῆ δὲ τὸ ἄρθρον, 86 ἡσις, ἣν μὲν ἀπύρετος ᾗ, ἐλλέβορον, εἰ δὲ μή, μή, ἀλλὰ ποτὸν ὀξύγλυκν, εἰ δέοι) and *Π. ἀγμῶν* (*Fract.*, II.46 Klw.). — In some other texts, again, the rhetorical devices are very much more conspicuous than in the early treatise style: *Προγνωστικόν* (*Prog.*, I.78 Klw.) has a careful and slightly periodic style, avoiding asyndetic lists and hypomnematic details; *Π. τέχνης* (*De Arte*, 6.2 L) and *Π. ἀρχαίης ἱητρικῆς* (*V. M.*, I.1 Klw.) with their general and polemical approach; and *Π. φυσῶν* (*Flat.*, 6.91 L), which sounds rather like a sophistic speech. — Varieties within these limits can be found in the following texts: *Π. διαίτης* Bks 1—3 (*Vict.* 1—3, 6.466 L). *Π. φύσιος ἀνθρώπου* (*Nat. Hom.*, 6.32 L),⁶⁹ *Π. τόπων τῶν κατ' ἀνθρώπου* (*Loc. Hom.*, 6.276 L), *Π. διαίτης ὀξέων* Bk. 1 (*Acut.* 1, I.109 Klw.), *Γυναικεῖα* Bk 1 (*Mul.* 1, 8.10 L), *Π. γυναικείης φύσιος* (*Nat. Mul.*, 7.312 L), *Π. γονῆς* (*Genit.*, 7.470 L), *Π. φύσιος παιδίου* (*Nat. Puer.*, 7.486 L), *Π. παθῶν* (*Aff.*, 6.208 L), *Προρρητικόν* Bk 2 (*Prorrh.* 2, 9.1 L); and *Π. ἱητροῦ* (*Medic.*, 9.204 L) and *Π. ἐνυπνίων* (*Insomn.*, 6.640 L) the contents and style of which suggest a later date.⁷⁰ Cf. also *Π. ἀδένων* (*Gland.*, 8.556 L) and *Π. καρδίης* (*Cord.*, 9.80 L) which look like fragments of larger works, and the problematic fragmentary *Π. ἐβδομάδων* (*Hebd.*, ed. ROSCHER).⁷¹

⁶⁸ POHLENZ, *Nachr. d. Ges. d. Wiss. z. Gött.* 1937, *Philol.-hist. Kl.*, *Alt. wiss. N.F.* II.4 p. 100, calls attention to the use of the word *κόπρος* in this tract (1.3), whereas the technical terms *διαχώρησις* and *διαχώρημα* are usually preferred by the Hippocratics.

⁶⁹ Perhaps written by Polybos, the son-in-law of Hippokrates.

⁷⁰ The following can be wholly disregarded, as they are obviously late: *Παραγγελίαι* (*Praec.*, 9.250 L), *Π. ἀνατομῆς* (*Anat.*, 8.538 L), *Π. εὐσχημοσύνης* (*Decent.*, 9.226 L), *Π. παρθενίων* (*Virg.*, 8.466 L), *Π. κρισίων* (*Judic.*, 9.276 L), *Π. κρισίμων ἡμερέων* (*Dieb. Judic.*, 9.298 L).

⁷¹ *Studien z. Gesch. u. Kultur des Altertums* 6.3—4, Paderborn 1913. At least the latter part (from 12 onwards) is written in a treatise style. The cosmological first part is rather hypomnematic and has very much in common with the style of the periegesis (above, p. 99); but dating it as early as the 6th century, as ROSCHER argued (see esp. p. 127), seems very doubtful indeed.

The vexed question of the authenticity and chronology of the Hippocratic texts will perhaps receive some illumination from the above considerations. Here only a rough guess can be ventured. I suggest that some of the hypomnematic texts, such as the Epid., perhaps some of the *τέχναι*, and those treatises that correspond most closely to the stylistic standard of the Aër., should be regarded as written by Hippokrates himself sometime during or after the Peloponnesian war: his reputation as a medical writer implies that he did not publish merely *ὑπομνήματα* or *τέχναι*; on the other hand he is not likely to have used, like Plato, a very wide stylistic range. The aphoristic texts in particular may contain older material; the rest represents an accretion of contemporary and later additions.

The rest of the early classical physicians known to us by name, notably Akron,⁷² Philolaos,⁷³ Polybos of Kos,⁷⁴ Euryphon of Knidos⁷⁵ and his pupil, Herodikos of Selymbria,⁷⁶ remain stylistically unidentified.

Conclusion

The »scientific« style as employed by Aristotle and, hence, by scholars and scientists of all ages all over the Western world, did not come into being before the 4th century B.C. As is shown above all by the Hippocratic writings, it has two main sources: the type of style, manifest to us in some Ionic prose texts from about 440 onwards, which I have called »early treatise style«, and the prose of technical description and instruction, the roots of which can be followed back to the late archaic age. The former seems to have received influence from early oratory, and obviously never loses an emotional tone and a corresponding stylistic colouring. In particular the rise of argumentation in this emotional context is worth observation. Non-affective demonstration, as in mathematical texts, cannot be proved to have been written down in the 5th century, and probably exercised little stylistic influence. Technical prose, again, developed a measure of exactness and abstractness of expression,

⁷² Associated with Empedokles, see Diog. L. 8.65 (Vors. 31 A 1) and WELLMANN, RE I, 1894, col. 1199. The *II. ἰατρικῆς* in Doric attributed to him by Suidas apparently was a treatise, not a *τέχνη* nor *ὑπομνήματα*; and the existence of Doric prose treatises at such an early date seems to me very problematical.

⁷³ See above, p. 95.

⁷⁴ Cf. above p. 111 n. 69.

⁷⁵ Cf. above p. 108 n. 67.

⁷⁶ For his theory of humours see Excerpt. Menon. 5.10. — For the rest of the physicians, see the survey in SARTON, Hist. of science, p. 331–347.

and a systematization within brief units. The contribution of the sophists to the intellectualization of prose may have been of an indirect kind; evidently they did not themselves write »scientific« prose, and their use of abstract expression seems to have had a different stylistic purpose.

The amalgamation of argumentation and technical prose, and the regression of emotion and stylistic ornament, occurred mainly in Attic prose after Thucydides, though there are indications of these tendencies in the Hippocratic writings. They reflect the changed conditions of the 4th century. The mass of specialist knowledge required was ever increasing, and the writer who wanted to cultivate this knowledge and make deductions from it was not forced to discuss it and present his considerations in front of a public but he could — whatever Plato thought of this method — write down his 'publication' in the remoteness of his library or study. The hegemony of the written word had begun.