II.—On Some Post-Classical Greek Architectural Terms

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Ἄντυξ, ἀψίς, βασιλική, γωνία, ἡμισφαιρίον, κτίζω, στοά, σφαῖρα, σφαιρίον are discussed. Some of these terms are employed in apparently loose and ambiguous fashion by writers of the time of Justinian and later. Some writers, for example, call a dome a *sphairion*, while others call a dome a *hemisphairion* and a half-dome a "fourth part of a *sphairion*." Apparently graphic imagery rather than technical exactness determined the choice and employment of architectural terms and descriptive expressions. A connection is suggested between such use of architectural terms and the Greek habits of observation and the Greek attitude toward scientific and technical matters.

Historians of ancient architecture have been plagued by the apparent lack of any settled usage or established standard meanings of some architectural terms in the literary sources. The ancient writers, describing a building or an architectural element, will employ periphrases and literary locutions which sometimes seem almost incomprehensible; and when they do use a single, apparently simple and well-known term, they are capable of employing it with what sometimes looks like the gayest irresponsibility, so that one comes eventually to distrust even expressions which, if their English equivalents were used in a similar context in modern writing, would be perfectly clear-cut.

In this state of affairs the lexica are not unfailingly helpful. Neither Sophocles nor Van Herwerden nor Liddell and Scott, even in the new edition, gives any hint, for example, of the first question which will be discussed here, whether *hemisphairion* means a dome or a half-dome; and the lexica do not mention the fact that *hemisphairion*, *sphaira* and *sphairion* are commonly used by Greek writers of the Roman period to denote domical structures.[1]

[1] A systematic effort to deal with the terminology has been made by D. S. Robertson, who includes in his *Handbook of Greek and Roman Architecture* (ed. 2 [Cambridge, 1943] 379–393) a useful Appendix in which ancient terms are listed and certain difficulties in their interpretation are pointed out. This subject, however, is naturally only incidental to the main purpose of the volume, and the list makes no pretension of settling the problems mentioned in it. A study of the meaning of *tholos*, in which other terms are incidentally discussed, has been made by F. Robert, *Thymélè* (Paris, 1939; Bibl. des Écoles franç. d'Athènes et de Rome, fasc. 147). Another recent study

Architectural historians who deal with the history of the dome have been baffled and sometimes led astray by the peculiar vagueness of some of the literary passages which in some cases form the only evidence for the existence of certain domes or of certain types of domes. When the ancient authors mention a dome, they often call it a *sphaira* or a *sphairion*.[2] While inexact, in the geometrical sense, this is a perfectly comprehensible and justifiable method of describing an architectural element whose most prominent characteristic is its sphericity; and that the ancient writers were aware of the inexactitude, but also aware of the usefulness of the graphic image, is suggested by Procopius' reference to the main dome of the Church of the Apostles at Constantinople as *τὸ σφαιροειδές*, which might be translated "the sphere-like structure."[3]

The next step, of course, is to make a rule of thumb and to infer that if a dome is called a *sphairion*, then a half-dome will be called a *hemisphairion;* the Greek term is to be, so to speak, divided by two just as the dome itself is divided by two. Here, however, a difficulty arises. Passages will be found in which a dome is unmistakably called a *hemisphairion* and a semi-dome is called a "fourth part of a *sphairion*."[4] This usage of course is closer to geometrical correctness, but there would seem to be no way of reconciling such usage with the use of *sphairion* to mean a dome. Furthermore, it raises the question, in contexts in which there is no

of great interest is by A. Piganiol, "L'hémisphairion et l'omphalos des Lieux Saints," *Cahiers archéologiques* 1 (1945) 7–14. I am collecting material for a glossary of Greek architectural terms, particularly of the late antique period.

[2] E.g. Paulus Silentiarius, *St. Sophia* 201, 371; Constantine of Rhodes, *Description of the Wonders of Constantinople and of the Church of the Apostles*, 565, 588, p. 53, ed. E. Legrand, *REG* 9 (1896); Nikolaos Mesarites, *Description of the Church of the Apostles* 15, p. 30.16, ed. A. Heisenberg, *Grabeskirche u. Apostelkirche* (Leipzig, 1908) 2. In the well-known passage of Procopius, *Buildings* 1.1.46, *σφαίρᾳ* represents Haury's conjecture for *σειρᾷ* of the MSS and earlier editors; the traditional reading seems preferable (cf. D. S. Robertson, *CR* 55 [1941] 79).

[3] *Buildings* 1.4.15, cf. 1.4.16, where *τὸ σφαιρικόν* means the five domes of the Church of the Apostles, and 1.10.14. Constantine of Rhodes (503) speaks of the same roof as *σφαιροσύνθετος σκέπη* (cf. 581, 610). Mesarites (39, p. 92.1) speaks of the Mausoleum of Constantine, which was attached to the Church of the Apostles, as *σφαιροειδὴς καὶ κυκλικὸς . . . ναός*, "sphere-like and circular church," i.e. a domed circular building (cf. H. Koethe, "Das Konstantinsmausoleum u. verwandte Denkmäler," *JDAI* 48 [1933] 185–203). The octagonal church at Antioch is called *ἐκκλησία σφαιροειδής*, "sphere-like church," in Theophanes, *anno mundi* 5833, p. 36.28, ed. De Boor. Here *σφαιροειδής* has come to mean simply "domed."

[4] *Hemisphairion:* Evagrius 6.8; Mesarites 13, pp. 27.9–10; 28.14; Agathias 5.9, p. 296.10, Bonn ed. *Σφαίρης ἡμιτόμοιο*: Paul. Silent. *St. Sophia* 187, 483, cf. 509. *Σφαῖραν ἡμίτμητον*: Const. of Rhodes, 580. *Σφαίρας τεταρτημόριον*: Procop. *Build.*1.1.33. *Σφαίρης τετρατόμοιο*: Paul. Silent. *St. Sophia* 356.

other way of controlling the meaning, whether a given *hemisphairion* is a dome or a half-dome.[5]

Closer investigation will show that while some authors are apparently careless and inexact in this respect, there are others who are remarkably careful and precise. One of the best-known writers on such subjects is Procopius of Caesarea, who left a voluminous record of the building activities of Justinian.[6] His references to domes and domical structures are made with a considerable variety of expressions. The main dome of the Church of the Apostles at Constantinople, as has been noted, is τὸ σφαιροειδές (1.4.15), and the five domes of the same church, mentioned collectively, are τὸ σφαιρικόν, which one might translate "the spherical element" (1.4.16). The main dome of St. Sophia is a σφαιροειδὴς θόλος (1.1.45). The dome of the Church of the Archangel Michael is an ὄροφος ἐν θόλῳ, a "roof in the form of a *tholos*" (1.8.13), and the dome in the Palace of the Chalke is an ὄροφος ἐν σφαιροειδεῖ μεταρσίῳ ἐπικυρτούμενος, a "roof curved in a sphere-like form high in the air" (1.10.14). Procopius, then, prefers to use the graphic images provided by the epithets "sphere-shaped" and "sphere-like" when speaking of domes. He divides the sphere only once, in writing of the semi-dome in the apse of St. Sophia as the "fourth part of a *sphaira*," σφαίρας τεταρτημόριον (1.1.33).

Procopius' contemporary Paulus Silentiarius has occasion to speak of domes and semi-domes in his elaborate verse description of St. Sophia.[7] He calls the main dome both a *sphaira* (201) and a "*sphaira* cut in two" (187, 483, 509). The conch of the apse is a "fourth part of a *sphaira*" (356). Paulus also uses numerous periphrases and literary locutions, more elaborate than those of Procopius, in which, however, there is no reference to "spheres."[8]

[5] One of the best-known examples of this difficulty is the old question of the meaning of *hemisphairion* in Eusebius' description of Constantine's Basilica or Martyrion built at the east of the Holy Sepulchre (*Vita Const.* 38, p. 94.18, ed. Heikel); on the controversy, see Heisenberg, *op. cit.* (see note 2) 1.38–39, and H. Vincent and F.-M. Abel, *Jérusalem* (Paris, 1912–1926) 2.162–163. It is now generally held that the *hemisphairion* is the apsidal semi-dome of the basilica, but in the past some scholars supposed that it was a full dome over the Tomb. See the restored plan by K. J. Conant, *A Brief Commentary on Early Mediaeval Church Architecture* (Baltimore, 1942) Pl. 7.

[6] All references are to the *Buildings*, ed. and transl. by H. B. Dewing and G. Downey (Loeb Class. Libr., 1940).

[7] References are to P. Friedländer's edition, *Johannes von Gaza u. Paulus Silentiarius* (Leipzig, 1912).

[8] See the list of architectural terms collected by Friedländer in his Introduction, 124, note 3.

Nikolaos Mesarites, in his prose description of the Church of the Apostles at Constantinople, written about A.D. 1200, shows the same inconsistency as Paulus Silentiarius, speaking of the main dome both as a *sphaira* (15, p. 30.16, Heisenberg) and a *hemisphairion* (13, p. 27.9). In one case he calls the main dome a *sphaira* (14, p. 28.16) immediately after having called it a *hemisphairion* (13, p. 28.14).

Similar usage appears in Constantine of Rhodes' verse description of the same church, written between A.D. 931 and 944.[9] He calls the main dome a *sphaira* (565, 588) and speaks of the five domes all together as *sphairai* (574, 625); the roof of the church as a whole, including the domes, is a σφαιροσύνθετος σκέπη, a "sphere-formed roof" (503, cf. 610). However, Constantine once calls the main dome a "*sphaira* cut in two" (580), in a passage in which he uses *sphaira* alone of the same structure (588, cf. 574).

In contrast, Choricius of Gaza (born ca. A.D. 490) is remarkably meticulous. In his prose description of the Church of St. Sergius at Gaza,[10] he shows a notable interest in technical architectural description, saying that he describes the apse in the language of the μηχανοποιοί or architects.[11] This apse is surmounted by the τέταρτον μέρος σφαίρας . . . κενῆς, the "fourth part of a *hollow sphaira*" (1.27). The main dome of the church is a σφαῖρα διάκενος ἐπίσης μεριζομένη, a "*hollow sphaira* equally divided" (1.19) and a κοίλη ὀροφή, a "*hollow* roof" (1.26). Choricius, to the writer's present knowledge, is the only writer of this period who is careful enough to note that a dome or a semi-dome is a *hollow* spherical form.

It appears from this that while some writers took little interest in absolute precision in such matters, and were more concerned

[9] The present writer is preparing editions, with translation and commentary, of the *ekphraseis* of Constantine of Rhodes and Nikolaos Mesarites.

[10] *Laudatio Marciani* 1, ed. R. Förster and E. Richtsteig (Leipzig, 1929). There are translations by R. W. Hamilton, "Two Churches at Gaza, as Described by Choricius of Gaza," *Pal. Explor. Fund, Quart. Statement*, 1930, 178–191, and F.-M. Abel, "Gaza au VIe siècle, d'après le rhéteur Choricius," *Revue biblique* 40 (1931) 5–31. These translations are not always accurate with respect to architectural terms.

[11] *Laud. Marc.* 1.27. See also the elaborate and precise description of a wooden dome in *Laud. Marc.* 2.41–46. The term *mechanopoios* was used (in the Roman period) to designate a fully-trained and qualified architect, and does not, as has been thought, mean simply an engineer or mechanical engineer; cf. G. Downey, "Byzantine Architects: Their Training and Methods," to appear in *Byzantion* 18 (1946). The conception of the science of "mechanics" in relation to the theory and practice of architecture is illustrated by passages in Pappus of Alexandria, 3.1022–1024, ed. F. Hultsch (Berlin, 1876–1878) = I. Thomas, *Selections Illustrating the History of Greek Mathematics* (Loeb Class. Libr., 1939–1941) 2.614–617, and in Plut. *Marcellus*, 14.5–6.

with literary effect than with technical exactitude, it was on occasion considered desirable to be precise, even though this meant that writers like Choricius were merely anxious to parade their learning and their familiarity with technical details. Moreover, it was possible for the same writer to exhibit both characteristics. Naturally, if one wished to describe a dome vividly, the most arresting feature of its appearance was its sphericity, and everybody knew that if you called a dome a *sphaira*, you called it this because it *resembled* a *sphaira;* and it was understood that a dome was not a *sphaira* in the geometrical sense. This is of course what one would expect, and the phenomenon is by no means confined to post-classical Greek literature. However, it is tempting to try to learn how far the phenomenon extends and to discover, if possible, the reason for this toleration of what was, after all, neglect, when it would not (to our way of thinking) have been so very difficult to achieve accuracy.

In the first place there was, in antiquity, a good bit of uncertainty and lack of uniformity in connection with at least some architectural terms. Vitruvius felt it necessary to make this plain, and his remarks are illuminating. In the *Preface* to Book 5, he writes,[12] ". . . the [technical] terms, used by the special necessity of the craft [i.e. architecture], by their unfamiliar sound seem obscure to the perception. . . . They of themselves are not obvious, nor is the nomenclature clear by customary use. . . ." In the following Book he illustrates this in detail. Describing the Greek house, he says (6.7.5–6), "Now between the two peristyles and the visitors' quarters there are passages called *Mesauloe*, because they are between the two aulae or halls. But we [Romans] call them *Androne*s, the men's quarters. It is very remarkable that this suits neither Greek nor Latin usage. For the Greeks call *androne*s the halls where the men's banquets take place, because women are excluded. Yet other terms are of like application, such as xystus, prothyrum, telamones and so forth. For xystus in its Greek signification is a colonnade of ample breadth where the athletes are trained in the winter; but we give the name of xysta to promenades in the open, which the Greeks call paradromides. The Greeks give the name prothyra to the vestibules which are in front and serve as the entrance; we call *prothyra* what in Greek are named *diathyra*.

[12] 5, *praef.* 2. Translations are quoted from F. Granger's edition in the Loeb Class. Libr. (1931–1934).

Again, if statues of the male figure support brackets or cornices, we call them telamones, nor do we find in any treatises what they are and why they are so called. But the Greeks call them *Atlantes*."[13]

Other examples of lack of uniformity have come to be generally recognized. The use of κτίζω and κτίσμα is characteristic. To the sixth-century chronicler John Malalas and others, these words denote any kind of construction work, either original construction, repair, enlargement or completion, so that κτίζω means only "to have to do with building activities."[14] The Romans consciously employed *aedifico* in an equally loose sense.[15] Procopius equates οἰκοδομέω and καινουργέω.[16] Nothing could be vaguer and less precise than some of the uses of κτίζω which baffle and mislead archaeologists; but then if an ancient writer was interested not so much in the exact nature of the activity to be recorded as in the fact that there was a certain undertaking connected with *ktisma* which needed to be recorded briefly, what other word could be used? A well-known example of the misinformation for which this usage can be responsible is furnished by Malalas' statement (280.12, Bonn) that Antoninus Pius "built" a great temple to Zeus in Heliopolis. This date was accepted until Wiegand's study of the architectural evidence showed that the temple was founded under one of the Julian dynasty; Malalas' notice must refer to repair, additions or other such work.[17]

Another characteristic example of the ancient attitude is furnished by the way in which στοά and βασιλική are employed by writers of the Roman period.[18] *Basilike* is applied to buildings consisting of open courts surrounded by covered colonnades; and *basileioi stoai* can be used apparently of covered colonnades, perhaps along streets, rather than independent structures. Evagrius uses *stoa* alone to denote an independent building which Malalas calls a

[13] In 10.2.9, Vitruvius notes that in a certain kind of crane, a special variety of block is called *epagon* by the Greeks, *artemon* by the Romans.

[14] G. Downey, "Imperial Building Records in Malalas," *BZ* 38 (1938) 1–15, 299–311. The same use of the verb "to build" appears in Aramaic and Syriac inscriptions of Syria; see two studies by J. Obermann, "Inscribed Tiles from the Synagogue of Dura," *Berytus* 7 (1942) 89–138, and "A Composite Inscription from the Church of St. Simeon the Stylite," *JNES* 5 (1946) 73–82.

[15] *TLL* s.v.; cf. P. Kretschmer, *Glotta* 10 (1920) 160.

[16] *Build.* 1.6.4. Cf. the use of οἰκοδομέω in Pausanias 1.5.5, 1.42.5.

[17] H. Winnefeld in Th. Wiegand, *Baalbek* 2 (Berlin, 1923) 146–147.

[18] G. Downey, "The Architectural Significance of the Use of the Words *stoa* and *basilike* in Classical Literature," *AJA* 41 (1937) 194–211.

basilike; and at the same time, colonnades along streets are both *emboloi* and *stoai*. Procopius employs *stoa* to describe any building which consists basically of a colonnade, e.g. colonnades along streets or about a forum; the porch of a building; the narthex of a church; the interior galleries of St. Sophia; covered galleries in city-walls and fortifications; and Cinnamus calls an aqueduct a *stoa*.[19] Evidently anything which consisted essentially of supports bearing a roof was called a *stoa* or a *basilike*.

The graphic image as the basic element of architectural terms and expressions is illustrated again by the use of the words ἀψίς and ἄντυξ. Greek writers of the Roman period use ἀψίς to mean both an arch and a vault.[20] The Romans employed *absis* to mean, in addition to an arch or a vault, the apse of a church, but this usage apparently never appears among the Greeks. Ἀψίς originally meant a loop or mesh, the felloe of a wheel, or a disk (Liddell and Scott), and it was evidently the idea of a curved or rounded profile which is responsible for the use of the word to describe both an arch and a vault. The noteworthy point is that the word is applied equally to an arch or to a vault, which could be viewed as a prolongation of an arch. Thus it is plainly the idea of curvature which determined the use of the word, and this idea was paramount over the structural difference between arch and vault.

Though less often employed, ἄντυξ exhibits the same characteristics. Originally the word meant the edge or rim of anything round or curved, such as the rim of a round shield, the rail round the front of a chariot, or the orbit of a planet; in Eunapius it is used to mean the outermost tier of seats in a theatre (Liddell and Scott). Paulus Silentiarius uses the word to describe various architectural elements, always with the idea of a curve. He employs it to mean the "rim" or "drum" upon which the main dome of St. Sophia rested (187, 481, 483, 813, 864); the semi-circular plan of the sanctuary (419), and the arches which supported the central dome (458, 516). Finally, it is used, in very loose fashion, to describe the various curved profiles (of arches and domes) visible on the exterior of the building (613). Thus, in the usage of ἀψίς and ἄντυξ, it seems to have been the idea of curvature which was responsible for their

[19] Downey, *op. cit.* (see note 18) 209, note 2; Joh. Cinnamus p. 275.2, Bonn ed.

[20] Examples are common; typical passages are Paul. Silent. *St. Sophia* 484; Malalas p. 339.2, Bonn ed.; Agathias 5.9, pp. 295–296, Bonn ed.; Anonymous of Banduri in *Scr. Orig. Constantinopol.* p. 81.8–9, ed. Preger. Cf. W. Sackur, *Vitruv u. die Poliorketiker* (Berlin, 1935) 180, note 5.

employment to denote quite different architectural elements. Once more one is reminded of the seemingly inconsistent use of *sphairion* and *hemisphairion*.

One more word, γωνία, will serve to illustrate the startlingly different interpretations which can, at least by modern scholars, be placed upon a seemingly simple word. Γωνία (akin to γόνυ, "knee") means in general a corner or an angle; it is used by Euclid as a technical term denoting a plane or solid angle, and thus naturally came to mean also a carpenter's square. In literature, it denotes either an internal or an external angle of any kind; hence a corner or secluded spot; the four quarters of the compass; a joint. Diodorus Siculus uses the word to describe the starling or cutwater formed by an angular projection on the pier of a bridge. In the Septuagint, the chiefs of Israel are called *goniai;* the leaders were, so to speak, the cornerstones of the people (Liddell and Scott). In building inscriptions of the Erechtheum *gonia* is applied to a corner of the building, and the adjective *goniaios* is used to describe cornerstones in any course from foundation to cornice.[21] In Procopius' description of St. Sophia (*Build.* 1.1.44) the word is used of the angles formed by the pendentives. No difficulty can arise here. In Constantine of Rhodes and Nikolaos Mesarites, however, there are passages in which the use of the word has given rise to a great variety of interpretation. Constantine, in describing the plan of the Church of the Apostles, states (559) that the architect, in designing the square central hall of the cruciform church, set up *goniai*. One would naturally take this, as O. Wulff did,[22] to refer to the four angles of the square central space; yet Th. Reinach[23] and A. Heisenberg,[24] in order to develop certain architectural theses of their own, maintained that Constantine was using the word in the sense of cutwater in which it is found in Diodorus, and that in this case the word means the foundations of the piers which stood in the four corners of the central hall. The solution of this question depends upon other factors which are too complicated to discuss here;[25] the point is that it was possible to advance two such different interpretations of an apparently simple passage. An even more startling array of opinions, however, has grown out of a phrase in

[21] *IG* 1².372, col. I, lines 9 and 19; col. II, line 161; *IG* 1².373, col. I, line 80.

[22] "Die sieben Wunder von Byzanz u. die Apostelkirche," *BZ* 7 (1898) 322.

[23] *REG* 9 (1896) 95.

[24] *Op. cit.* (see note 2) 123–124.

[25] The question will be treated in my forthcoming edition of Constantine of Rhodes.

Mesarites' description of the Mausoleum of Constantine at the Church of the Apostles (39, p. 82.1–3): *σφαιροειδὴς καὶ κυκλικὸς ὁ σύμπας οὗτος ναός* (i.e. the Mausoleum), *διὰ τὸ πολυχωρητότερον ὡς οἶμαι τοῦ σχήματος πυκναῖς ταῖς περικύκλῳ στωϊκαῖς γωνίαις κατατεμνόμενος*. This cryptic sentence has given rise to several studies in each of which Mesarites' words are interpreted differently and are made the basis of a different restoration of the building.[26] Almost every word of the sentence can be and has been given a different meaning, and the elucidation of the whole problem would take us too far afield in the present place. For the present purpose the point is that *goniai* has been taken to mean (1) massive angular pillars running round the interior of the building, either free-standing or engaged in the outer walls; (2) niches in the outer walls; or (3) angular recesses in which the imperial sarcophagi were placed. For each different interpretation of *gonia*, both literary and architectural evidence of a greater or less degree of convincingness has been adduced. Sometimes the interpretation of the word is made to depend upon architectural considerations, and sometimes the architectural restoration is made to depend upon the meaning of the word.

To one familiar with the Greek habit of mind, these phenomena are not surprising. One may, however, feel a certain amount of curiosity when one recalls that the educated Greek had a fairly careful grounding in geometry and that Greek architects in particular made great use — relatively more than modern architects — of geometrical methods. Geometry played a large part in their training,[27] and two of the best-known architects of late antiquity, Anthemius and Isidorus, the builders of St. Sophia, were professional geometers and were probably as well known in contemporary professional circles for their mathematical work as for the construction of the great church.[28]

What was it, then, that made it possible — one might say almost inevitable — for people who, as laymen, were familiar with the concepts and uses of geometry and could, as professionals, excel in

[26] For a summary, see the latest restoration, by H. Koethe, *op. cit.* (see note 3).

[27] See the discussion of the curriculum of architectural studies by Pappus of Alexandria, *loc. cit.* (see note 11).

[28] Sir Thomas Heath, *A History of Greek Mathematics* (Oxford, 1921) 1.421, 2.25, 194, 200–203, 518, 540, 543; *id.*, *The Thirteen Books of Euclid's Elements* (Cambridge, 1926) 3.519–520; Hultsch, *RE* s.v. "Anthemius," no. 4; Fabricius, *RE* s.v. "Isidorus," no. 32.

its study and application, to be so apparently careless in the use of simple architectural terms? Granted that this carelessness sometimes could have no serious results, there were nevertheless occasions on which this looseness of usage must have caused doubt and misunderstanding among contemporaries.

The answer to this question lies outside the scope of the present study, since it involves many more phenomena than can be examined here. Nevertheless, it may be useful, for further study of the point, to offer two observations, which do not, however, pretend to exhaust the subject. The first is based on B. E. Perry's essay "The Early Greek Capacity for Viewing Things Separately."[29] Noting the well-recognized psychological differences between the ancient Greeks and ourselves, Professor Perry points out that one of the characteristics of their minds, as it appears in their literature, is "the capacity for contemplating only one thing or one aspect of a thing or person at one time, purely for its own interest and without regard to the ulterior implications or associations that an early Greek narrator might indeed be concerned about, but often is not, and that a modern person with his more schematic habits of mind would almost inevitably bring in."[30] Examples are found abundantly in Homer — in the similes, the interpolations, and the episodes in which, at the end of a scene, the poet introduces a comment or observation which appears to us comical, even illogical. In syntax the preference for parataxis over hypotaxis points to the same habit of mind. "The Hellenic temperament," the author observes,[31] "is extremely versatile and manysided. It is wont to enjoy, contemplate, or deify by turns, and with a remarkable intensity, directness, and truthfulness in each case, everything in experience good or bad that naturally pertains to man; but while it gives play to every side of human nature, it does not allow any one side to tyrannize over or interfere with the others. In that respect the early Hellenic temperament differs from our own; for we are system-ridden and are constantly subordinating one idea or image to another to which we have given superior authority, whereas in the early Greek mind all ideas and images tend to remain, as in the childhood of the race, free and independent." The phenomena which Professor Perry studies are all characteristic of

[29] *TAPhA* 68 (1937) 403–427.
[30] *Op. cit.* (see note 29) 404.
[31] *Op. cit.* (see note 29) 407.

the period down to the fifth century B.C., though, as he points out, they do not cease then, and "the average Greek, even at a much later period, was always versatile and paratactic, so to speak, by instinct."[32] Surely something of this kind is reflected in the tendency to be indifferent as to whether a dome should be called a *sphairion* or a *hemisphairion*, and to use ἀψίς indifferently for an arch or a vault.

Our other observation grows out of F. W. Walbank's recent study of "The Causes of Greek Decline."[33] Walbank points out[34] that one of the results of the bisection of Greek society into two classes with antithetical interests (those who possessed the power and the wealth, and those who actually did the work), was "the diversion of scientific thought away from practical observation and experiment, into notional and metaphysical channels, and the consequent check on technical progress." It is true, as Walbank observes, that the Hellenistic and Roman engineers achieved certain technical advances and that they enjoyed a certain prestige above other workers engaged in professional and scientific tasks, who would have been regarded as little better than artisans. Nevertheless, one wonders whether the attitudes in the matter of architectural terms which have been pointed out here are not a reflection of a more general attitude, according to which such matters, while undoubtedly possessing a certain practical importance of their own, were not of great general interest and were to be left to craftsmen and professionals. Procopius, an educated man, gives an interesting and readable account of the construction of St. Sophia and other buildings, but his descriptions are far from complete and accurate, and one sometimes feels that he is anxious not to compromise his aloofness by going into such details as plan and measurements. Choricius of Gaza and Constantine of Rhodes, on the other hand, seem anxious to be clear, exact and complete, so far as possible within the frame of their literary media; but they feel it necessary to make it plain on occasion that they are employing technical language — a point which Procopius never mentions.

That the Greek conception of a technical term is very precise and clear, one may quickly learn from Euclid and his successors. What may easily be overlooked is that Greek non-technical writers

[32] *Op. cit.* (see note 29) 406, note 2.
[33] *JHS* 64 (1944) 10–20.
[34] *Op. cit.* (see note 33) 17.

evidently did not feel constrained to use technical language on all the occasions which to us would as a matter of course call for well-established technical phraseology. The graphic image to us is quite a different thing from the technical term, and can be substituted for a technical word only on occasions when picturesque language is called for, and ordinarily can be used only when there is no danger of misunderstanding. In Greek literary method, however, the graphic image enjoyed a role of such importance that expressions which were basically graphic images could be commonly employed as technical terms, and could be preferred for this purpose to less vivid but more exact words. In fact there would almost seem to be a question as to the extent to which the Greeks would have considered certain words to be technical terms in the sense in which we think of certain words as technical terms (*stoa* is a notable example). It is, to our way of thinking, perfectly possible and natural for a word to be employed concurrently in both a technical sense and a non-technical sense which may be more or less different from its technical meaning; but a technical term, to our way of thinking, should have only one clear and unmistakable meaning. And of course many of our technical architectural terms (e.g. squinch, pendentive) can be employed only technically and would be of no use for ordinary literary purposes. It seems far from certain, however, that this was true among the Greeks, at least in post-classical times. Greek men of science — especially geometers, mathematicians and physicians — were of course accustomed to the employment of technical language, and the architects doubtless had a professional vocabulary such as we find in Vitruvius. Some men of letters like Choricius of Gaza and Constantine of Rhodes recognized the existence of such a vocabulary and on occasion borrowed from it. Other writers, however, ignored such usage, evidently because it did not suit literary convention. This attitude suggests that men of letters, educated laymen and the general public did not consider it necessary to employ technical architectural language regularly or consistently, and that they did not feel that such terms as they did employ needed to have fixed and indisputable meanings. The handy word or the graphic word (e.g. *stoa*, *gonia*, *hemisphairion*, *sphairion*) was adequate, and if this word had other non-technical meanings which might render it obscure or ambiguous when used in a technical or quasi-technical sense, that was no obstacle to such employment. There must have been occasions

on which a writer felt it difficult to express his meaning clearly in suitable literary fashion, and one wonders how far some of our more ambiguous texts represent either the maintenance of literary convention, or despair in the face of ill-defined and ill-understood technical or quasi-technical expressions.

We must, then, in addition to establishing the meanings of architectural terms, try to distinguish technical jargon and professional language from merely descriptive expressions employed more or less at the whim of the writer. It is to be hoped that the texts when studied from this point of view will prove more fruitful and less misleading than has sometimes been the case in the past.

It must be noted, finally, that the recent editions of Liddell and Scott do not uniformly represent improvement in the definitions of such words. The primary meanings given for *stoa* in the new edition of Jones and McKenzie are *roofed colonnade, cloister*. In the eighth edition (1897) the definition is *a roofed colonnade, piazza, cloister*. In Drisler's American edition based on the second British edition (1845), the definition is *a place enclosed by pillars, a colonnade, piazza, arcade, cloister*. Comparison of these definitions with the study of *stoa* cited above in note 18 will show that the earliest definition is the best and is very nearly completely adequate. The words which have been dropped from the definition are not synonymous with those which have been retained, and it cannot be maintained that the truncation of the definition in the recent editions, made presumably in an effort to save space, does not represent a loss in the understanding of the word.[35]

[35] *The Classic Greek Dictionary*, designed for use in schools (Chicago, Follett, 1930), represents the older tradition with *a place enclosed by pillars, a colonnade, piazza, cloister*. The same definition appears in the abridged Liddell and Scott designed for use in schools (New York, American Book Co., n.d., preface dated 1871).