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WHAT DID PLATO READ?

Plato was a prose writer. He employed a full palette of artistic colors. In order to craft a language suitable for philosophy he stretched preexistent literary usage to its limits. In his work one can find very specific tropes and linguistic formulations that can only be suited for prose and are typical of former prose compositions. The premise that Plato read and read widely, then, merits examination. Despite the reservations about writing that Plato has Socrates express in *Phaedrus 274b-277a*, Plato himself was likely a "reader" with a range of literature available to him. While the philosophical implications of writing may have seemed questionable to him, both the written ideas of his predecessors and the *formal* elements of writing influenced him. In fact, some of his perceptions of the inadequacy of writing probably came from his own struggle to perform a transforming alchemy on a language that heretofore had a limited philosophical conceptual lexicon. Intent upon philosophical priorities, he worked hard to force the extant coinage to fit his restless inquiries. Whether Plato's dialogues are discussed as dramas or as doctrine (esoteric or exoteric) they embody a compendium of the prose legacy of the preceding two centuries. (1)

The influence of poetry on Plato is a subject in and of itself. Here I will examine the premise that technical, scientific and historical prose writing was an important determinate of Plato's written efforts. The international language-literary Ionian-was used about 425, the time of Plato's birth, by learned men of diverse origins: Sicily, Asia Minor, the Aegean islands, northern Greece, both Ionians and Dorians. Thomas Cole points out that there might have been little need for written texts in the metropolitan atmosphere of the agora where the latest scientific theories and discoveries, historical and Sophistic *epideixis*, were read to all. "Ionian intellectuals", Cole explains, "were widely scattered throughout the islands and coasts of the Aegean and had limited opportunities for coming together for the exchange of ideas". If the research or speculation conducted in Miletus or Ephesus were to be made available to other areas there would have to be texts for consultation and eventually reading.(2) This type of text existed from the sixth century. Cole argues that these writings abandoned poetic meter and diction and became more obviously a written prose, composed to be studied and deciphered "by the eye as well as heard by the ear." He bases this observation on the compactness, precision, regularity and complexity that he finds in late fifth century texts. These are works composed for perusal at leisure rather than heard in performance. Plato who was in communication with traveling scholars had access to a wide selection of prose writing extant during his time and formulated new figures of speech and terminology based on them.

Plato as Reader

There is documentation from a number of sources that Greece was a literate society well before Plato's time. Alfred Burns and Debra Nails both challenge the idea that literacy was a newfound phenomenon of the fifth and fourth centuries. The majority of Athenian citizens were literate by then and there was a prose literature from the end of the sixth

century B.C. (3) Burns cites a group of nine writers who fall into the late sixth and first half of the fifth century, and a second group contemporary with Herodotus and Thucydides who wrote treatises. He cites evidence for extensive prose literature, particularly by logographers writing about the legendary past. Pherecydes of Syros, Anaximander, Anaximenes and Hecataeus all wrote books in prose before Herodotus' *Histories.*(4) The title of Pherecydes' book *The Seven Recesses (heptamychos*) is documented in the Greek tradition and in Diogenes Laertius' quote of the beginning words. Nails also cites works by the sixth and fifth century naturalists. (5) Theophrastus gives a précis of the natural philosophical views of Anaximenes of Miletus (586-526) and it is generally assumed he wrote a book from which Theophrastus was working. Xenophanes of Colophon (ca. 570-ca.475) wrote on philosophical subjects. By 430 there were eight or nine natural philosophers whose books where available. Philolaus of Croton a contemporary of Socrates wrote treatises as did Leucippus of Miletus (fl. 440-435) and Democritus of Abdera (b. ca. 460-457). Theophrastus gives evidence for a body of writings when he attributes the *Great Diakosmos* to Leucipupus. This is also given in the lists of Democritus' works suggesting that there was a body of writings coming out of the school of Abdera. Later these were all attributed to Democritus. Xenophon ascribes a library to Euthydemus (Mem. 4.2). Euripides (fl ca 445 BCE) is lampooned as a bibliophile in Aristophanes' *Frogs* and apparently had a personal library as well. In Aristophanes (fr. 580) an apprentice, Cephisophon is identified who may have assisted Euripides in the actual production of books. (6)

As far as writing itself is concerned, it is now believed, certainly by Debra Nails, that reading and writing was common place in the fifth and fourth centuries and probably earlier. Turner contends that the excavations in the Athenian agora of large quantities of ready made *ostraka* with incised lettering (as well as on Athenian vases) documents general literacy. (7) Turner also cites the discussion in Plato's *Laws* (810) where there is an allusion to the elementary education of children. Reading and writing is taught at the age of ten, but speed in calligraphy is not encouraged until later. Turner suggests that an everyday business hand or cursive writing, in which speed was a factor, was in widespread use in contemporary Athens and elsewhere in Greece. He contends that easy and legible writing would not have sprung up suddenly, and concludes that reading and writing is a normal part of everyday Athenian education. Plato suggests that should the guardian of the laws come across compositions similar to these laws, it should be committed to "writing" (*graphesthai)* (811e5). Herodotus, Burns reports (381), takes it for granted that the Greeks have been literate ever since the Ionians acquired the alphabet from the Phoenicians… (*Hist*. 5.58). Demosthenes sneers at Aeschines helping his mother to keep school by performing the task of grinding the ink.

First and foremost, however, we must pay attention to Plato's own citations regarding the easy use of books. In *Apology* we learn that Anaxagoras' cosmological treatise (or at least a doctrinal synopsis of it) could be bought for one drachma from the stalls in the Orchestra (*Apol*. 26d-e). Zeno's appearance in Athens with his written composition (*grammata*) in tow at the beginning of *Parmenides* documents a matter of fact use of texts. If one accepts the authenticity of Diogenes Laertius, he reports that according to some authorities Plato wrote to Dion and persuaded him to purchase three Pythagorean

treatises from Philolaus for 100 minae and on the basis of these texts he wrote *Timaeus*. (8) In the *Phaedo* (98b4-6) Socrates is described as having such high hopes for Anaxagoras' books to enlighten him on astronomy and physics that he, "… made haste to get hold of the books and read them as quickly as I could." His disappointment after reading them suggests a restless mind seeking knowledge in any form that it could be acquired, perhaps ascribing to Socrates his own experience with reading. Friedlander discusses the stages of Plato's own philosophical and/or political development as possibly analogous to what he ascribes to Socrates in this passage. He finds parallel terminology in Plato's description of his political development but does not find any hint of the philosophical development in the *Seventh Letter*. He points out that Plato does briefly discuss a progression (*diagōgē*) through four definite stages of knowledge. (9) In the *Critias* (113b), Plato has Critias mention 'writings' concerning the meaning of names that were in the possession of his grandfather and which he now owned (though it is not clear whether these were in fact books or a record of an inscription). In *Hippias Minor*, there is a description of Hippias' arriving at the Olympian festival; carrying poems, epics, tragedies, dithyrambs and "all sorts of prose works" (368c11-d1)"… *katalogadēn pollous logous kai pantodapous sugkeimenous*). At the beginning of *Theaetetus* Eucleides presents Terpsion with a book (*biblion*) in which he wrote the conversation he had with Socrates. He describes it as corrected and edited for awkward constructions. Phaedrus has been trying to memorize Lysias' erotic speech from the book he is holding beneath his cloak. In *Laws* (811e5), the educator is to select appropriate material for the lessons in literature. In the *Seventh Letter*, Plato mentions that Dionysius wrote (*yegraphevai*) a treatise on the subjects which he, Plato, had instructed him on and composed it as though it were his own invention (341b3-5). Plato was in a milieu of readers, book collectors and writers and may have read what we always assume that Plato heard. Xenophon corroborates Plato's vignettes by giving us a little glimpse of a fifth century reader when he describes Socrates as turning over and perusing with his friends "…the treasures of the wise men of old, which they have left written in books." (10) In the *Symposium* (4.27) Charmides says he has seen Socrates and Critobulus huddled over a book (*biblion*).

Technical Writings

Root concepts for philosophy cannot occur without precedent, but carry a residue of meaning from the contexts from which they emerge. The intellectual history of philosophy can be found, not only in the panoptic scope of Greek scientific vision, but in the increasingly sophisticated technology that one finds in early cartography, astronomy, cosmology, architecture, medicine and mathematics. Many of the early authors were polymaths and the different disciplines were not as clearly separated from one another as they are today. Plato mentions the separate crafts if not separate reference manuals, and proposes separate disciplines for *education* (astronomy and geometry (*Rep.* 528d) for example). Certainly architecture was one. Hahn considers Anaximander to be the author of the first specifically philosophical book in prose (c. 548-547 BCE). During this same period Theodorus (the architect of the archaic Samian Heraion) and Chersiphron/Metagenes (the architects of the archaic Artemision) wrote practical guides aimed at temple builders. Medicine had its own literature as well. Thomas Cole differentiates between texts such as the speeches of Antiphon and Thucydides and

reference texts for consultation. The latter are "written compendia of information" for those who might need expert technical advice or opinion and who could not consult an expert in person. (11) He contends that reference texts such as these were produced in some abundance. Gerald Naddaf points out that writing was not just an *aide memoire* but a sine qua non for reflective analysis. The content of many writings was far too complex to digest in a single performance, and thus did not belong to the oral tradition. (12) Reading Plato would have in his repository of technical writing: the medical works of Hippocrates, the geography and cartography of Anaximander, architectural and mathematical treatises as well as works on the musical canon. Boundaries between disciplines in the sixth to fourth centuries were more fluid, and they embodied certain common approaches. Principles of proportion, for instance, are applied across technical genres. Attempts to set down the rules of proportion and make precise measurements are found in sculpture, architecture, musical theory, and mathematics. There was an atmosphere of increasing scientific precision and exchange of ideas. Hahn points out that the common thread that unites Thales and Anaximander, Theodorus and Rhoikes, Chersiphron and Megegenes are projects in applied geometry. (13) The extant fragment of Philolaus specifically mentions geometric proportion. Eudoxus, in the fourth century, entitled his book *On Speeds*, and explained how he was able to calculate the periods of the planetary revolutions without error.

Prose compositions regarding the arts that relied on principles of proportion can be documented as well. Vitruvius reports that there was work on perspective and reports that an Agatharchus, a painter of stage scenes at Athens during Aeschylus' time, had left a treatise on the subject. It served as a guide to Democritus and Anaxagoras, who both discussed problems of perspective and wrote about them. (14) Nails mentions several books of which we have mostly titles: Sophocles, *On the Chorus*; Ictinus, *On the Parthenon*; Polyclitus, *On the Symmetry of the Human Body*, Meton, *On the Calendar* and Hippodamus, *On Town Planning.* (15)

Musicology is one technical field that yielded all kinds of speculation related to the cutting of the *Kanōn,* that is, the techniques necessary to achieve harmony in the musical scale. Archytas' divisions were in the service of attunements in practical usage. Philolaus discusses this as well. Plato incorporates the divisions of the *Kanōn* and converts them to a theory of proportion in the *Timaeus*. These numbers measure corresponding lengths of a single long strip of soul stuff. The intervals in the strip are filled in by a pattern representing musical notes at intervals of a tone or a semitone and this corresponds to the mechanics of geometrical promotion. According to Cornford, Plato's applications depart from plausible musical harmony because Plato strives to make an analogy with the solid numbers. He stops at the cube symbolizing the body in three dimensions. Continuous geometrical proportion is chosen as the most perfect bond to connect four solid bodies forming the whole body of the world due to theories about nature of number and the soul. They do not correspond to the construction of a musical scale with any accuracy. (16) Kahn argues that the diatonic scale of the *Timaeus* resembles that of Philolaus rather than Archytas. (17) Although, the specifics of the use of the musical scale have been a subject of debate in the literature, the important point is that Plato incorporates divisions native to the theory of harmony in his cosmological

dialogue. In applying these divisions to the very creation of the material universe, Plato sees the possibility of a kind of universal mathematics of proportion as a paradigm for physical phenomena. All portioning begins with a limiting parameter within which further limits are imposed by formulae. The result is that ultimately all difference is consonant. (18) Symmetry thus determines consonance in musicology as a finite and very specific set of consonances producing rational sound. Analogously, all material appearance presupposes the limit of ratio as a precondition for being determinate as a "this." For Plato, interval (*diastēma*) is the infrastructure of determinate existence, as the cutting of the *Kanōn* demonstrates. Plato uses the word 'intervals' (*diastemata*) for the segments which are created by the tetratkys like portioning of the Soul stuff. This word is the same used by ancient musicologists. Intervals are the extensions which exist in the space created by the distribution of the original whole now apportioned according to ratio. The cutting of the *Kanōn* and the determination of constant ratios, then, is a model schema that is heuristic for scientific theory. (19) It demonstrates he fact that Limit (*peras*) has to do with interval imposed upon the Unlimited (*apeiron*) according to ratio. (20) Limit/Unlimited are ontological mainstays of Plato's speculations (see especially *Philebus*). In Plato's hands this opposition has become far more sophisticated than it was in the original Pythagorean table of opposites. Acoustics then, is a good example of the kind of technical discipline that was pursued by polymaths such as Archytas, Philolaus, and Archytas' student Eudoxus, as well as other mathematicians of a younger generation. Plato transmuted the mechanics of these studies into philosophical discourse.

Spherics had advanced by Plato's time as well. J.L. Berggren has described how the discussion of harmony in *Republic* is related to Plato's assimilation of astronomy to geometry and harmonics to arithmetic. (21) He cites Ian Mueller's 1980 article in which the latter argues that Plato's view is not unreasonable, given certain Greek scientific texts that make clearer the kind of astronomy and harmonics Plato has in mind in the *Republic*. He refers to texts such as Theodosius *Sphaerica*, Autolycus *De sphaera quae movetur* (the Rotating Sphere), *De ortibus et occasibus* (Risings and Settings) and Euclid's *Phaenomena*. They reflect, he contends, the disciplines as they were contemporaneous to Plato. Berggren disputes the possibility that the two sphere model was available to Plato as it was introduced between 372 BC and before 340 BC. Plato's discussion antedates the three texts Mueller addresses. For Plato it was merely an ideal rather than an accomplished theory. These texts, however, probably did not spring up entirely unprecedented, since the *Republic,* written before the year 370 BC, was not that far off in time from their publication. Berggren suggests that "…there seems to be unanimity on the central point that both Autolycus and Euclid rely on an earlier work for the basic theorems of the subject. This work must have appeared anywhere from 360 to 320 B.C.

Herodotus applied the term (*logopoioi*) to early writers of narrative prose who conducted *historia* (investigation) into historical events. (22) There were mythographic treatises tracing the genealogies of families who claimed descent from a god or hero, geographical works in the form of a *periegesis* or *periplous* describing areas and people met on a coasting voyage and accounts of the founding of cities (*ktiseis*). A circular boundary for the world was a common way of depicting the known world. It is found in Homer's *Iliad* (Shield of Achilles) and in the round map of *oikoumenē,* first devised by Anaximander,

with its circular limits. Star maps and armillary spheres were circular as well. The idea that the inhabited earth or known world is contained by bounding limit suggests a conceptual map of inner and outer geographical space. This construct promotes a whole range of metaphysical possibilities implied by *peirata* (limits) and *periodos* (a line around the borders of earth). In them the world is seen in the form of an organized totality for the first time. In both mythical (Myth of Er of *Rep.* 617a-c) and in philosophical accounts Plato presents a universe that is a limited bounded whole. It is found in the *Timaeus* (33b1-8) where the universe is one in which the fitting shape for the containment of all things is the sphere, perfect and self similar and in *Parmenides*. Parmenides establishes that the One has limits in so far as the parts "are contained" (*periechetai*) by the whole (144c-145a). These images recall writings on ancient geography and cartography where *oikoumenē*, with its circular boundaries was depicted in both diagram and word. (23) In *Parmenides*, the Parmenides poem with its depiction of the whole as a '*pantothen eukuklou sphairēs* (perhaps inspired by cartography and astronomical maps) promotes a philosophical *aporia.* There is spatial imagery at 145c4-5 when the Athenian Stranger and Theaetetus discuss whether the One (*to hen*) has a center and extremes and what this means for being (*to on*). (24) Does the fact that the one has a center and extremes mean it is not a whole; that it is not being? (145c4-5). The fact that the one, here, has the aforementioned background helps clarify this *aporia*.

Architecture is an area that engendered prose writing from the sixth century on. Theodorus, Rhoikes, Chersiphron and Metagenes, contemporaries of Anaximander, like him, all wrote prose works. Hippodamus of Miletus was the mid-fifth century city planner who rebuilt Rhodes in 404 and laid out the Piraeus as well as other ambitious projects in city planning. Hahn speculates that he too must have left a prose treatise behind, given that Aristotle could give a detailed account of his theories a century later. He made his plans according to geometric layouts. Hahn points out that those making drawings, building models, diverting rivers, inventing tools and applying geometrical techniques all utilized theories of proportions. (25) Burkert cites the accomplishment of a whole series of technologists whose bridges, temple architecture and bronze casting techniques all date from the end of the seventh century. Terminology such as *gōnia* (corner, angle), *tetragōnon* (rectangular or square), *gnōmōn* (a carpenter's rule) and *diabiabētēs* (compass) are technical terms in use in architecture and engineering. These terms, he contends, are put to a more conceptual usage much before Plato. As early as Theognis and Simonides they are used to symbolize impeccable truthfulness and accuracy. This usage documents a very early precedent for the "…elevation of ideas, from the realm of craftsmanship to the plane of the symbolic." (26) The column is a good example of the transposition of a technical architectural feat to a literary albeit mythical component of an imagined cosmos. The column in monumental temple architecture has a cosmic significance, as it symbolically separates and joins or interpenetrates heaven and earth (Hahn). In the Myth of Er (*Rep*. 616b-c) Plato describes the cosmos as suspended on a column-like axis. In doing so he makes use of both its technical function and its symbolic significance. Plato's usage of an architectural analogue goes even further when he conceives of the activity of the Demiurge in creating the cosmos as a 'technical fabrication.' The demiurge is one who has "fabricated" (*etektēvato*) the cosmos (*Timaeus* 33a6-b1) by keeping his gaze on the paradigm. Herodotus used the term paradigm, in an

architectural reference to the project of rebuilding the temple of Apollo at Delphi, to refer to a model. In the *Timaeus*, where the analogue is clearly "construction," the use of the term (*paradeigma*) may be more specific than the more general usage of paradigm that can be found in *Sophist* and *Statesman*. Here it is possibly inspired by the extensive blueprinting and drawing-up of elevation and other type plans and descriptions in technical writings, or to architectural models based on them. In the *Republic* (500e) the word is used as well. Socrates says that "a city could never be happy other than by having its outlines drawn by painters who use the divine paradigm." There seem to be both the analogue to graphic use and the meaning of moral exemplar in this usage. Plato's later use of *paradeigma* in the *Sophist* and *Statesman* is more generalized. Gill finds usages that can mean example or model, and Murr points out three distinct usages in *Statesman*. (27)

The field of medicine was well advanced and known to Plato. He refers to Hippocrates of Cos in the *Protagoras* (311b-c) and in the *Phaedrus* (270c1-5). In the latter Socrates cites Hippocrates' assertion that the correct method in medicine is to study the 'nature of the whole.' Socrates suggests that the correct method is to discern whether a thing is simple or complex, whether it has the capacity for acting or being acted upon etc. Lloyd speculates about which of the medical treatises Plato is citing when he refers to the 'whole of nature.' (28) Lloyd points out that the passage in the *Phaedrus* has often been taken to refer to *On Ancient Medicine and Airs, Waters, Places*. Lloyd writes extensively about the standards that medical writers set for causal analysis and rational inquiry, specifically Hippocratic writers. (29) He documents the difference that arose between "temple medicine" and other charlatanry (*alaxoneia*), and the more advanced type of reasoning associated with the centers of medical training such as Cos or Cnidus. (30) Plato's inquiries, in the *Theaetetus* in particular, regarding knowledge as perception (as Lloyd points out) may relate to this view. Other middle dialogues concerning the standards of valid reasoning and truth may have some precedent in the kind of distinction these medical writers delineate. In another context, Plato uses "illness" as a metaphor for the ignorant soul. In the *Timaeus* (88b5-6), when he says that unwillingness and lack of ability to learn leads to *amathia* (ignorance), he calls this defect the greatest disease of the soul (*he megistē nosos*). In the *Charmides* the analogue between the illness and ignorance of the soul (*nosos tēs psychēs*, 228b7-8) is carried through much of the dialogue. Therapies (*therapeusthai de tēn psuchēn* and *pharmakon)* are to provide intellectual cures, provided they focus on the whole (*to holon*) (156d6-157a3).

Plato was most certainly taken with mathematics and stipulated in the seventh book of the *Republic* that Arithmetic, Geometry, Stereometry, and Astronomy were essential in the training of philosophers. His characters frequently use mathematical examples. Plato emphasized the theoretical character of the mathematical sciences. (31) Mathematics both served as an exemplar of stable knowledge and impressed upon him the possibilities of a universal way of analyzing the physical world. It created, for him, a vision of the whole that could be rationalized and idealized through the application of universal technical schemata. In the *Republic* (527a6-b2) Plato points out that ". . . squaring and applying and adding and the like, is a language of doing whereas the real purpose of the study is for pure knowledge." In the *Timaeus* he presents a view of the physical world that is

unified by mathematics. Were Plato to possess a library, then, it would certainly contain mathematical treatises. Sr. Thomas Heath and others have contended that the completed subject matter of Books I-II, IV, V, and VI perhaps III of Euclid's *Elements* were extant in the fifth century, if not yet compounded by Euclid himself. (32) Hippocrates of Chios, for example, whose date is commonly put about 450 B.C. or a little later, is said to have written the first *Elements of Geometry*. His idea of two mean proportions between two straight lines had already appeared in his reduction of the problem of doubling the cube. (33) Plato's teacher in mathematics, Theodorus, had an influence on him as did Theaetetus, another of Theodorus' pupils and a younger contemporary of Plato. Theaetetus investigated the regular solids, and these were what came to be known as the 'Platonic figures'. Theaetetus' achievements included characterizing lengths and studying commensurability in *dunameis* (square roots). He also worked on the similarity (*homoiōsis)* of numbers which are not similar to one another by reference to their participation in planes. These mathematical issues provide models for assimilation, harmony and other Platonic ontological analogues. The use of *symmetria* (common measure), a mainstay of the theory of commensuration of lines, and the use of that term in relation to the soul as in the *Meno* (87c-88b) is a typical example of a term borrowed from mathematics and applied in philosophical speculation. The clearest example of geometrical terminology applied to cosmology is that of the *Timaeus* (31b5-32c5), where it is claimed that that the most beautiful of bonds, whereby the universe holds together, is *analogia* (proportion). The theory that triangles make up the elements of the physical world obviously has a geometrical origin as well. Though Eudoxus was a younger contemporary of Plato's, he studied with Archytas whose extant fragment discusses geometrical proportion, the type that Plato uses in the *Timaeus* for the creation of the world soul. Eudoxus' discoveries in proportion in mathematics provided Plato with a mathematical example of diversity within unity. Burkert suggests that Plato's mathematical theory of the planes in the *Laws,* as well as in other allusions, must be that of Eudoxus as well. The theory of proportion was well-known among professional mathematicians. Similarly, Socrates' assertion (*Rep.* Bk.VII, 529d1-d4) that the speed and slowness of the revolutions of the heavenly bodies in true number is graspable by reason and intelligence, but not by sight, it is a nod of approval to the new mathematicians who concentrate on mathematical theory.

In both the *Republic* and the *Laws* astronomy is classified as one of the three subjects crucial to everyone's *paideia*. Plato's extensive use of astronomy contributes to the figures of speech with which he formulates ontological constructs as well. In the *Laws* (897c5-9) Plato makes the analogy of right reason and the perfect circular motion that is found in the heavens. He models the revolutions of reason in the immortal soul after the revolutions of the celestial bodies. The circle of the 'Same' and the 'circle of the Other' of the *Timaeus* are modeled on the ecliptic and equator. To make these allusions, Plato did not have to harken back to the cosmologists. Eudoxus' *Phenomena* and *Henoptron* (*The Mirror*, presumably a descriptive image of the heavens) were contemporary works that probably were in wide circulation. All the developments in the area of astronomy that studied circular motion were sources of inspiration to Plato. Noetic stability interacts with the moving life of the Universe in the figure of circular motion. There are supportive passages for this already in the *Republic* (Bk. IV, 424a), where Plato alludes to the

"cycle" of growth of the state, and in the well known Myth of Er. Eschatological /cosmological imagery based on astronomy continues in the *Timaeus, Epinomis* and *Laws.* The kind of careful study that Plato made of astronomy, and his detailed knowledge of the scientific terminology of the astronomers could well support an argument that he made use of written texts. Plato's deployment of this body of knowledge in the service of promoting noetic rather than empirical truths gives witness to his practice of reworking technical terms and methods of proof to take on metaphysical and ontological significance.

Finally, mention must be made of the methodological advances that were achieved by the historians. Gentili and Cerri point out that in Thucydides' work "mythical and imaginary components present in the stories of the poets were rejected in the name of historical truth." (34) Plato makes the distinction between *muthos* and *logos* in the *Protagoras* and reiterates it in the *Sophist* (259d-64b), explicitly stating that *logos* is defined as "falsifiable discourse while myth is unfalsifiable". (35) Hecataeus of Miletus (6^{th} to 5^{th} c. B.C.) relied on history and his own experience, and criticized myth. Thucydides writes rational and accurate historical prose representing a rigorous search for truth. Herodotus is a transitional figure who did at times depend on legend and unverified stories. He himself contrasted his own work *as more accurate* with the earlier writers of chronicles, (*logoi) (Hist. 2, 99)*. (36) Thucydides claims that he would investigate "with the greatest possible accuracy…in the case both of the events in which I myself participated and those regarding which I got my information from others" (sorting out reports from witnesses and eliminating bias). The criterion of accuracy is based on empirical or logical verification. Gentili and Ceri point out (140) that vigorous investigation of the truth as a standard contrasts with oral narration. The critical attitude toward oral culture that the historians promoted, they suggest, is similar to Plato's objections to the poetry of the past. If written works meant for the consumption of readers are to be rational they must be validly referential and when they refer to ideas must have stable meanings just as valid history must be based on established event. It is precisely the fear that the written word (not only in poetry) could not do this that Plato expresses in the *Seventh Letter*.

Plato the Prose writer

Charles Kahn has stated that "when it comes to detailed observation for later reference, whether of star risings, harbor entrances, temple dimensions or the symptoms and progress of a disease , there is no substitute for writing and in the end, no substitute for prose." (37) Whether or not the Academy had its own library is a matter of debate. Books were read aloud as well as read silently. Whichever the case, Plato was strongly influenced by Ionic prose in both technical terminology and in style, as Denniston points out. (38) Prose literature is not equivalent to the oral exchanges that occur in conversation or in literature meant for performance. There is a difference between prose composed for serious study and performance and rhetorical compositions designed to be spoken at public sessions. The sheer scope of Plato's integration of previous literature causes one to speculate that he had access to texts to examine and reexamine. It seems implausible that he could have utilized such a wide range of material based only on oral exposure. Books, after all, were increasingly composed to be read as time went on. At the end of the fifth

century we find an example of a Greek writer self-consciously producing a discourse designed only to be read. This is Thucydides' famous claim to have written (*egrapse*) an account of the Peloponnesian war that was meant to be of permanent interest (I, 22). Plato wrote in the height of the fourth century, and in a cosmopolitan intellectual milieu. He was able to be eclectic and make use of a wide range of literature. Plato had to craft a suitable vehicle for the abstract ideas that are required for philosophical prose meant for reading. He can be understood on entirely new grounds by understanding that his extensive allusions to literature of the past are not a mere recording of others' views but are the background for reworking key concepts. This is a reorganization of knowledge and a subordination of predecessors to Platonic values and ideas. For Homer Ocean is the origin of the gods (*Iliad* 12.201). To Thales the origin and nature of things is water. To Plato Being *is*. Thales uses a concrete noun in place of a mythical name to postulate a common substance in all things; Plato is creating and using a philospheme.

Preexisting literature served another important function. Technical writing made its own unique contributions to grammar. The definite article, for example, evolves from the demonstrative pronoun into the generic article as prose writing develops. Snell gives the example of the horse in Homer. It is never mentioned as the concept of a horse but always as a particular horse. Hesiod also does not use the article characteristic of the later scientific concept. In literary prose, on the other hand, the generic use of the article is an entrenched fixture. Heraclites speaks of *the* act of thinking (112; 113) *the* universal (2; 114) and *the* logos (*tou logou*) (fr. 1, fr.50 fr. 2), while Anaximander, as reported by Aristotle, Hippolytus and Theophrastus, speaks of *the* infinite (*to apeiron*). (39) The article is capable of making a substantive out of an adjective or a verb, and these nouns serve as the stable objects of thinking. The definite article helps to make a noun of an abstract entity, to promote it to the status of a universal, and to allow the philosopher to make statements about it as a universal (The one, the whole, the soul etc.). Snell points out that where Plato might speak of the just i.e. Justice, Hesiod speaks of a just act (*Works* 226, 231). Similarly, the infinitive and the participles set the ground for verbal noun-formation. *Sophrosynē*, for example is equivalent to the active infinitive. Further, Snell contends that beginning in the fifth century verbal nouns ending in –sis, for example *noesis,* become prominent. A multitude of distinct formulations propagated a multitude of words that were capable of referring to abstract ideas because of the addition of this ending. Another prime example of prose innovation is the Parmenidean identification of the copula 'is' with existence. The connective is essential for logical relation, but in philosophical writing it takes on an ontological implication.

Denniston points out the very important fact that in the expression of abstract ideas the existing vocabulary was inadequate. He discusses extensively the abstract substantives in *Greek Prose* and gives numerous examples of Plato's prose innovations and the similar usages in other fourth century prose. (40) He too mentions the large number of verbal abstracts ending in -sis that appear in Thucydides and Euripides for the first time. *To kalon* and *to dikaion* are other examples of neuter adjectives with the article, a combination that is not in common usage and is specialized. Denniston gives many examples of abstract subjects in philosophical prose which have a strong sense of personification. Thucydides frequently uses the neuter article and adjective instead of an

abstract substantive, while the article with infinitive is used by Demosthenes and other orators as a substitute for the abstract substantive. A good example of the use of the article that is capable of making a substantive out of an adjective or a verb is in Heraclitus' writing when he speaks of *to aphronein* (B113). Charles Kahn has presented some interesting suggestions about the philosophical use of *einai*, *esti* or *on* where "the veridical nuance or construction is of importance." One peculiar feature of the philosophic use is the negative form "*to mē on."* He speculates that the veridical *einai* is a usage exclusive to philosophers. He believes the first to do so was Parmenides. (41)

Another source of influence upon Plato's writing were rhetorical enhancements that could be adapted to philosophical usage. The ubiquitous use of analogy as in Homeric poetry is a formal element found in Plato's own writing. Techniques of persuasion and methods of argument in the written speeches of the Sophists led to development of logic as G.E.R. Lloyd points out. (42) He cites J. Goody's suggestion that certain types of writing (tables, lists, formulas, recipes) as *aides-memoire* may have stimulated certain types of questions and problems such as those of classification. Plato often has his characters working on a philosophical definition and beginning with placing the object of definition within a class structure. Written compositions must adhere to an ideal of definable truths that have an inherent autonomy and permanence. Robb discusses this practice and points out that it is different from the contradictory and unverifiable verbal usages that one might find in paratactic oral presentations. (43) Preserved oral communication, according to Robb, reveals the following features: the prevalence of rhythmic speech over prose, of event over the "abstraction", and the prevalence of the paratactic arrangement of parts (be they phrases, episodes, ideas) over alternative schema possible in other styles i.e. synthetic, logical, causal, etc. Plato, judged by these criteria, was clearly a prose writer. His own use of myth, fictional dialogue and at times counter-intuitive examples (as in the idea that there is a 'form' of mud etc.) to embellish his prose writing is a subject of study in and of itself.

One compelling example of the process of transmuting earlier science to philosophy can be found in Plato's usage of Anaxagoras' concept of Nous. Plato writes about Socrates' hope and then disappointment with Anaxagoras' concept of Nous (*Phaedo*, 97b9-99d). Though Plato's Socrates critiques the concept, at the same time, Plato has crafted his own version of Anaxagoras' cosmological infrastructure. Anaxagoras' use of 'alone by itself' (*monos autos eph hautou estin)* of Nous and the term *metechai* (share in, as in *ta men alla pantos moiran metechei*, "all other things share a portion of everything") is terminology usurped by Plato. (44) The transformation of trope to concept is a process that is ripe with promising clues about the starting-points of metaphysics; metaphysics had to borrow its coinage from preexisting language, and a more overtly figurative language at that. Through Plato's alchemy Anaxagoras' images become terminology for a theory of forms. The 'itself by itself' existence of Forms, first asserted in the *Phaedo* (100b50-6 and 66a2) is a figure of speech used throughout the middle dialogues, and repeatedly in the *Parmenides,* as in the examples of separate forms of justice, beauty and good (*dikaiou ti eidos auto kath auto)* (130b10). Anaxagoras is not the only source for the use of auto kath' auto; fifth century medical literature employs it, as do other pre-Socratics. This particular usage, however, honed toward the noetic separation of Nous in the case of

Anaxagoras and of the ideas in the case of Plato, transforms it into specialized philosophic terminology. As it turns out the use of 'itself by itself' in relation to the forms is more common in Plato's dialogues than the usage of the term "separate." In Plato's discourse, differences are explained, not by a Nous that mechanically mixes and separates, but by participation in Ideas. Things have separate qualities and degrees of difference through objects sharing in the forms to varying degrees and proportions. Plato's language of participation (*metechei*) is another example of Anaxagorean influence. Sensible objects allegedly share in ideas, not in everything, as Anaxagoras states. Plato finetunes Anaxagoras' rhetorical coinage, and puts it to use to explain change and at the same time to maintain noetic stability. Similarly, as Taylor elaborates in *Varia Socratica*, by the time of Socrates the term "idea" (*eidos, idea*), which originally referred to the human form, had become a technical term for the ingredients which mix and unmix in the process of forming the world. (45) Democritus referred to his atoms as Ideas. In the Hippocratic corpus this term can refer to symptoms as well. Plato makes his own technical and idiosyncratic usage of this term in the theory of forms.

Plato, master prose innovator, was grappling with the changing technology of communication. In an era preceding the invention of dictionaries, fixing definitions was a process crucial to successful written communication and to knowledge, as Plato himself writes in the *Seventh Letter* (9342bff). Reprocessing meanings and redefining words, particularly those with abstract referents such as justice or good, amounts to subjecting these words to consistent norms. Gill points out (46) that reflection on definition is important to the *Theaetetus*. Theaetetus third definition of knowledge, "an account together with true judgment," comes closest to meeting the demand for a definition (although all three methods taken together of perception, true judgment, and an account together with true judgment may be the only adequate method as Gill has suggested). These criteria for knowledge are similar to those found in many of the scientific and historical treatises of the time, and in particular medical writings. In *Theaetetus* (179e-183c) there is a satire on the Heraclitean philosophy that would make a mockery of fixed meanings and rule out the possibility of stability. If one were a Heraclitean one would avoid the term 'is' and always use 'becomes' in order to avoid fixed meanings in discourse (*mē stēsōmen autous tō logō)*. Determinant subjects and predicates become impossible if everything is perpetually in motion and change. Radical flux destroys any claim to truth as the subject of a sentence cannot hold its reference long enough for a predicate to be attached to it. In such circumstances the indeterminacy of referring terms precludes the possibility of definitions.

The last quarter of the fifth century was a time, as Denniston's book *Greek Prose Style* documents, when fevered experimentation with language was not uncommon. Prodicus conducted lectures on the correct use of words and held a complete course on grammar and language. Socrates calls this the 50 drachma course and contrasts it with the one-drachma course which was all he could afford and which taught him very little. (*Crat.* 384b-c). Antiphon the Sophist gave lessons on the principles of word formation and new compounds were being formed with great freedom. Isocrates, a contemporary of Plato

was a determined prose craftsman and the master representative of the sophistic and rhetorical culture that had flourished in the Periclean period. He stated a strong preference for writing prose.

Conclusion

There has been a great deal of discussion about the shift from *muthos* to *logos*, oral to written tradition that is alleged to have taken place in Ancient Greece. These views presume that there was an intellectual revolution. Polymaths, however, thrived as early as the sixth century. Theodorus, for example, architect of the first monumental stone temple to Hera on Samos, c. 575 B.C., wrote the first architectural book in prose, predicted a solar eclipse, measured the height of a pyramid estimated the distance and of ship at sea and imported geometry from Egypt. Rigorous proof, second-order questioning and self-conscious methodologies were a parallel development in the many areas of science and technology, (As G.E.R. Lloyd has amply brought out in his many books and essays on Greek science). Philosophy cannot be isolated as a self-contained, self-referential discourse, but must be viewed in the context of its genesis out of a cultural, technological and sociopolitical milieu. The extensive prose *syngraphai* of the sixth through fourth century provide a mediating literature that helps us understand the evolution of philosophical prose and its terminology.

Even in the absence of direct citation, it is quite evident that Plato was a reader of prose treatises. In his own work he crafted verbal constructions geared to the expression of abstract ideas. In the *Phaedrus* Plato displays his awareness of prose writing when he calls it 'simple discourse' and uses the expression "like a prose writer or without verse" (metri*ō hōs poiētēs ē aneu metrou, hōs idiōtēs (Phdr*. 258d10, 267a5, 277e7). (47) The opposition is also found in *Laws* X (890a4). It is 'simple discourse' that Plato makes the vehicle for *epistēmē* (knowledge) and within its formulations he finds a language for philosophy. Without the influence of former prose writing, albeit mostly in technical fields, this advance could not have been possible. Plato's use of Socrates in the *Phaedrus* to express a mistrust of the written word, as well as his own remarks expressing doubts about writing in the *Seventh Letter* seem to go against his own practices. Perhaps they reflect his struggle with finding adequate formulations in the existing linguistic usage. Plato in his own creative work, however, did not escape its influence. Speculation about what Plato might have read, along with textual verification from his own writing, allows us to place Plato more squarely in the intellectual milieu of sixth to fourth century B.C. Greek literature.

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1. Brisson: 1995 reviews some of the issues involved in an esoteric interpretation of Plato (not Leo Strauss' kind); these theorists interpret Plato's reservations about writing as negative proof for the priority of oral doctrine.

2. Cole: 1992:80. Athens was… "…central clearing house and high court and council chamber (*prytaneion*) for everything that was said or thought in Greece (as Thucydides and Plato himself describe).

3. Turner: 1977. Burns: 1981. Nails: 1995. (Knox, 1985 cited by Nails:1995:218) believes the Academy to have had a library. Knox, as Nails points out (172 and 172 n. 38), believes that Protagoras, Gorgias, Prodicus, and Hippias, contemporaries of Socrates, all wrote prose treatises.

4. Herodotus (according to Harris 1989:80) completed his lengthy book in the 420's. Burns (378-379 and n. 42-47) cites Hecataeus (first half of the fifth century); Acousilaos of Argos (a long papyrus fragment of his work survives); Pherecydes of Athens (extant fragments); Democles of Phygela (mentioned also by Strabo) and Ion of Chios (483-423) as late fifth century writers. See Nails:1995:173. Kahn:1983:115, as well, argues that sixth century treatises of a quasi-scientific type were more common than might otherwise be supposed.

5. See Nails:1995:174-177 and Thesleff:1990 for discussions of what the pre-Socratics wrote. See Kirk and Raven and Schofield:1983 for documentation and sources of pre-Socratic fragments.

6. Nails:171 cites Davison 1962:219-220.

7. Turner:1977:8ff and Burns:1981. Burns cites literary references to fifth century schools documented by Herodotus (*Hist.* 6.27.2).

8. Diogenes Laertius: *Lives and Opinions of Eminent Philosophers (Platonis)* Loeb: 1972:285, also contends that Plato transcribed a great deal from Epicharmus the Comic poet, and he devotes quite a few pages to documenting the similarity between his and Plato's views. Wilamowitz disagrees with Diels about the authenticity of Epicharmus' "writings."

9. Friedlander:1973:6 and 239-240. Dicks:1985:95 suggest that Anaxagoras' topics; the sphericity of the earth and its position relative to the other celestial objects, relative speeds connected with the Philolaic system, and other persistent crude astronomical notions of the pre-Socratics were present well into the fourth century and Plato's own quest might be embodied in his remark about Socrates' disappointing reading.

10. Goody and Watt:1968:52 quote *Memorabilia* I, 6, 16.

11. Cole:1992:74. Hahn:2001:5

12. Naddaf:1998: xx.

13. Hahn:2001:83.

14. Heath:1981:174n.1, Vitruvius *De architecture*, vii, praef. 11. Heath cites Vitruvius mention of Agatharchus' treatise.

15. Nails:1995:171(citing Turner 1977:18).

16. Cornford:1935:66-68.

17.Kahn:2001:46

18. Brann:1975: Personal communication containing unpublished manuscript. Eva Brann (1975) in "The Cutting of the Canon" points out that it is the business of the musical canon to show that the consonant intervals can be put together or compounded (*suntithenai*) and in the process, there is a successive reapportioning of the bounding term, the octave being the greatest interval, 2:1.

19. Barker:1994:68-69 describes the musical revolution in the late fifth century. There was extensive work on the cutting of the canon. He points out that the principles underlying Plato's musical divisions in the *Timaeus* are not specific to music, but belong to the wider domain of number theory.

20. In Post Academic Platonism the relation that logos has to interval is a mainstay of musical theory. See Barker:1994:50, n.2. Viz. Porphyry's *Commentary on Ptolemy's Harmonics* (Ed. I During, Gotenborg, 1932.) Ptolemy discussed intervals in terms of Pythagorean ratio theory. Porphyry develops the analogy between musical sound and interval and geometrical point and line (173.18-21). Interval is the material posit (in a particular space), expressing a ratio, which is the actualization of a power in harmonics.

21. Berggren:1991: 232-233.

22. See "Ionian Logographers – Predecessors of Herodotus, *Oxford Classical Dictionary: 2003*. This on-line account largely reviews material taken from fragments and testimonia of FGrH (see index auctorum, 3.B.767 for individual names.) Hdt. 5.36. 125. Acusilaus, Charon, Damastes, Euagon, Hellanicus, Pherecydes, Scylax and Xanthus can all be considered contemporaries of Herodotus although the dates are uncertain. Some of the controversies and complexities of dating issues is well documented by Joyce:1999. Robert Fowler in his book *Early Greek Mythography* (BMCR review 2002.06.02) gives a good sense of the chronology of these writers and repproducs the fragments of twenty nine of them.

23. Kutash:2001: 226.

24. Sayre:1983:51ff. notes the item by item correspondence of *Parmenides* arguments to the attributes of the One that are found in Parmenides' "Way of Truth"

25. See Hahn:2001:80-83: and 2003:78-86. Kutash: 2002:207-212.

26. Burkert 1972:418-19 and n.101, 102.

27. See M.L Gill: 2006, 2-16 and El Murr, D. E.:2006, 1-9.

28. Lloyd:1991:200-203.

29. Lloyd:1979, devotes quite a long section of his essay, "The Criticism of Magic and the Inquiry Concerning Nature" to this theme.

30. Lloyd:1979:39. On page 135 of this same book Lloyd reports that *On Ancient Medicine* attacked the use of method based on *hypotheseis* or postulates where it was not clear whether what was said by the speaker was true or not (VM ch.1, CMG 1, 1 36.15) Hippocrates demands that physical theories be verifiable sometimes by the sensations (*aesthesis)* of the body itself (VM ch.9, CMG 1, 1. 41.2ff).

31. Heath:1981:284ff

32. Heath:1981: 297

33. Heath:1981:297

34.Gentili and Cerri:1968:140.

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35. *Soph*. 259d-64b. This distinction, as has been pointed out by a reader of this paper, first came from the Sophists. See also Brisson:1998:91.

36. Gentili and Cerri:1968:139.

37. Kahn:1983:118-119.

38. Denniston:1952: 5

39. Snell:1982:229

40. Denniston:1953: 20.

41. Kahn:2003:366.

42. Lloyd:1987:73 and 73, n.90.

43. Robb:1970:23.

44. Kutash:1993.

45.A.E. Taylor:"The word *eidos*." *Varia Socratica* ,Oxford, 1911.
See also: C.M. Gillespie, "The Use of *Eidos* and *Idea* in Hippocrates," *Classical Quarterly* (1912) 6.

46. Gill:2006:2: n.3..

47. Brisson:1998:47

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