The Universal in Physics I.1

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Recommended Citation

Owens, Joseph C.Ss.R., "The Universal in Physics I.1" (1964). The Society for Ancient Greek Philosophy Newsletter. 44.

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The opening paragraph of the Physics sketches succinctly Aristotle's general notion of scientific knowledge. First, in any scientific discipline, to know a thing is to know its principles or elements. Secondly, the natural path of human knowledge is from things that are more knowable for men to things that are more knowable in themselves, that is, from concretions to the distinct cognition of principles and elements. These two norms are regarded as applying to all scientific procedure. Here they are outlined briefly as an introduction to the Aristotelian philosophy of nature.

Up to this point the opening chapter of the treatise is recapitulating standard Aristotelianism in quite the expected way. According to the Stagirite's general noetic, the origin of human knowledge lies inevitably in sensible things. Sensible things are immediately apparent to a man's cognition. From knowledge of them, in consequence, all further human knowledge is in one way or another derived. All sensible things, moreover, are concretions. They are composites both in reality and from the viewpoint of the logician. In their own reality, they are composites of matter and form (Ph. II 1,192b8-193b18). From the logical standpoint they are composites of genera and species and subject, or, in the special terminology of the Categories (5,2a11-19), of secondary substance and primary substance. Their accidents may, for present purposes, be left out of consideration.

So far, then, everything is in order in these two initial assertions of the Physics. From the two premises, however, a rather surprising conclusion is drawn: διὸ ἐκ τῶν καθόλου ἐπὶ τὰ καθ ἐκματιστά ἐνὶ προτέρων ἔως. An unalerted reader would be inclined to understand this in English as "Therefore one should proceed from the universal to the particulars," or "to the individuals." The meaning would in this perspective be that one knows the universal first, and from the universal proceeds to knowledge of the individual or particular sensible thing. Such an understanding of the sentence, of course, strikes at once a jarring note. Elsewhere Aristotle's noetic regularly sees all human knowledge originating in the individual sensible things. The universal seems only a further and less definite way of considering things that are first known as individual.

In the Posterior Analytics (I 2,72a4-5) the universal is explicitly described as farthest from sensation, while the individuals, in direct contrast, are closest. Even within the Platonic setting, Aristotle maintains that the proponents of the Ideas were actually going from "the things around us" (Metaph. A 9,990b1--Oxford tr.) to corresponding separate entities of the same name. In an Aristotelian context the notion of going from universals to particulars hardly makes sense. As Tannery noted towards the end of the nineteenth century in his discussion of this passage, one would expect from all the analogous passages that Aristotle should say just the opposite. The Stagirite should find his point of departure in the particular that is immediately attained in sensation, and proceed to the general or the universal as his goal. The particular things are first known, and in them and through them the universal is reached. One would expect to read: "Therefore we must advance from the particular to the general." Yet the text clearly states the opposite. It asserts that one should start with the general or universal and proceed to the particular.

The direction the procedure has to take, accordingly, is stated unequivocally in this text. It is from universal to particular. But exactly what is meant by "universal" and "particulars" in the present setting? Whatever they may mean, the statement as a whole cannot very well against an Aristotelian background imply that human knowledge starts with non-sensible objects. Procedure from universals to concrete sensible things would not be any more acceptable to Aristotle than to Whitehead. The first step in the investigation of the passage, therefore, will be to determine exactly what is meant by "universal" and by "particulars" in its context.
To what, then, does "universal" refer in the present passage? In English translations it may appear variously as "generalities" (Oxford tr.), "general character of a thing" (Wheelwright), or "the concrete whole" (Wicksteed). Philoponus had distinguished its meaning here from the primary sense of "universal," and given it the signification of an indeterminate particular conception. Bonitz (Ind. Arist. 357a16) states that it is the starting point of knowledge alicus senso, but without specifying the sense and without giving other instances of this meaning. Ross (Aristotle's Physics, p. 457) asserts that in this passage the term "is not used in its usual Aristotelian meaning." He explains: "The reference must be not to a universal conceived quite clearly in its true nature, but to that stage in knowledge in which an object is known by perception to possess some general characteristic (e.g. to be an animal) before it is known what its specific characteristic is (e.g. whether it is a horse or a cow)." This would mean that the true nature of the universal is specific, while a genus is universal in another and not usual sense of the term.

But in Aristotle does to katholou have in fact a number of different significations? It does not seem to be characterized by him anywhere in this way, at least explicitly. It is not listed in Book A of the Metaphysics among the notions that vary in meaning. It is mentioned there as one of the various senses of "whole," namely "as containing many things by being predicated of each, and, while a unit, by being them all severally" (ἐνακοπείσι δὲ καὶ ἐκάστου καὶ ἐν ἑκάστῳ ἐς ἐκάστου... Metaph. 26,1023b30-31). It seems given the status of one of the definite senses of "whole," as though it itself had only one meaning. The meaning is that of something predicated of a number of instances, something that retains its own self-identity while existing in a number of different things. From a logical viewpoint the universal is regularly described by this capacity to be predicated of subjects. For instance, by "universal" is meant "that which is of such a nature as to be predicated of many subjects, by 'individual' that which is not thus predicated" (Int. 7,17a39-40; Oxford tr.). Examples are given: "Thus 'man' is a universal, 'Callias' an individual" (ibid.). From a metaphysical standpoint the presence of the universal in a plurality of things remains its distinguishing mark. The universal is "that which is of such a nature as to belong to a number of things" (ὅμειροιν ὑπὸ οίκειν ΠΕΡΙΟΛΚΕΝ-- Metaph. Z 13,1038b11-12). Throughout the Aristotelian corpus the term will be found used consistently in this one meaning. It does not seem to express a notion with many senses.

In particular, the view of John Philoponus that the universal in its primary sense means a determined and articulated nature, such as that of man or of animal, does not seem compatible with the teaching of Aristotle in the Metaphysics. In Book M (10,1087a16-23) the universal, clearly meant in its regular sense, is characterized as indeterminate (τοῦ καὶ τοῦ καὶ ἀριστού). In Book Z (13,1038b6-1039a14) the universal is denied the actuality that would be required to make it definite in itself. A primary and a secondary sense along these lines does not appear in the text of Aristotle. Another meaning of "universal" recognized by Greek commentators was that of cause in the sense that if the cause were done away with all its effects would thereby vanish. This was meant to explain how the science of the separate substances was universally the science of all beings. It obtains support from Aristotle's equating "universal" with cause in the opening chapters of the Metaphysics. But it is hardly applicable in the present context. To katholou in the text from the first chapter of the Physics does not refer to a cause, but rather to effects for which the causes are being sought.
Nor does it seem helpful to distinguish from the usual sense of the universal "the other and less frequent sense of 'concrete whole.'" The universal, as first known in the sensible things from which human cognition takes its origin, is always a concrete whole. It is "something composed of this particular formula and this particular matter treated as universal" (Metaph. Z 10,1035b29-30), "the compound of both taken universally"(11,1037a6-7; Oxford tr.). All the universals that are predicated of sensible things will be composites or compounds of this nature. In its regularly used sense, accordingly, the universal is a "concrete whole."

Finally, what about Roe's suggestion that "universal" in the present text means a generic nature, instead of the "true nature" of the universal that appears in the specific characteristics? At one place in the Metaphysics (H 1,1042a15) "universal," in the sense of specific nature, seems contrasted with genus. But does this imply that the generic universals are not universals in the true sense? If the universals were principles, Aristotle (Metaph. B 3, 998bl7-19) argues, the highest genera would fill this role. In Mure's translation of the Posterior Analytics (II 19,100al6-b3), in fact, the specific nature "man" is a "rudimentary universal," while the widest of the generic natures are the "true universals": "for though the act of sense-perception is of the particular, its content is universal--is man, for example, not the man Callias. A fresh stand is made among these rudimentary universals, and the process does not cease until the indivisible concepts, the true universals, are established: e.g. such and such a species of animal is a step towards the genus animal, which by the same process is a step towards a further generalization." In a note to the translation Mure states that the highest genera, the categories, are "par excellence universal" (n. 2).

Actually, in the Greek text, both the specific and the generic traits are merely called "universal." No adjective is added in either case to distinguish what would be a "rudimentary" universal from a "true" universal. Species and genera alike seem regarded as universal in the full sense of the term. In the above text from the Posterior Analytics, the specific nature that is perceived in the individual man is the starting point of the process. The next step is the establishing of the genus "animal," and so on in ascending scale until the highest genus is reached. According to this way of regarding the process of cognition, the object is first known in its specific nature and then gradually in its more generic traits. On the other hand, the Greek commentators were inclined to interpret in the opposite direction the process signalized in the opening chapter of the Physics. The confused object initially known appeared in its more generic traits, as an object at a distance will first appear as a body, then as something alive, and then as a man. In either case, however, the notion of universality seems to be fully satisfied. Both the generic and the specific natures are predicated of subjects and belong in these subjects as identical with each of them.

What, then, is the exact sense of "universal" in the opening passage of the Physics? The context describes it as a "whole," a whole that contains a number of things as its parts. In it these parts are confused (σύνεκτικον). What are these parts? Whatever they are, they will function as the καθέναν τὸν τόπον towards which the process of knowledge advances. If what is meant by parts in this context can be determined with satisfactory clearness, they should allow one to see the nature of the concretion formed by them. They should provide the key to the meaning of the universal as the notion is found used in the present passage.
The usual meaning of ἱππόλεπτον and ἱππόμεταλλον throughout the Aristotelian corpus is the singular sensible thing, or the particular event. In the Categories (5,2a34-b5) it is the logically primary substance, the individual that is predicated of nothing else while all the rest are predicated of it. In the Metaphysics (A 1,981a15-24) it is the singular thing that one encounters in sensible experience, the particular compound that is brought into being or destroyed in the visible and tangible world. In the Nicomachean Ethics (VI 8-9, 1142a14-1143b5) it is the variable fact about which one may deliberate and with which moral life is concerned. This regular use of the term in logical, metaphysical, and ethical contexts is too familiar to readers of the Aristotelian treatises to require more detailed instances.

The term, however, is also used at times to signify the different species of which a generic nature is predicated. In the Posterior Analytics (I 5,74a25-30) it means the equilateral, scalene, and isosceles types that exhibit the general nature of a triangle. In a word, it stands for the different species of triangle. It expresses something that is universal as a species, and not just a singular thing. It is meant in this sense when Aristotle (ApO. II 13,97b28) says that the ἱππόλεπτον is more easily defined than the universal. In the meaning of an individual sensible thing it would not be definable at all (Metaph. Z 10,1036a2-5). The conclusion drawn is that one should proceed from the particulars to the universal. In wording, this is just the opposite of the sentence in the opening chapter of the Physics. But the "particulars" from which the procedure commences here are clearly enough the lowest species. From them one goes on to the genera.

This use of the term shows that it may mean something universal. The term is not restricted to the singular individual. In the opening chapter of the Physics, accordingly, there need be no absolute requirement for it to mean the particular sensible things. With this inhibition removed, one may approach the illustrations brought forward by Aristotle to clarify its meaning in the present context. The illustrations used (Ph. I 1,184b10-14) are two. The first is that of a word compared to a definition. The word "circle," for instance, signifies an undifferentiated whole. The definition, on the other hand, divides the whole into its particular components (διαμετρὴν ἔξω ἱππόλεπτον) --b12. The second illustration is that children first call all men fathers and women mothers, but later distinguish the one from the other.

What does the first of these illustrations establish? The particular components into which the definition expressly divides its object are clearly enough the genus and the specific differentia. In the case of a circle these would be "plane figure" and "with every point on its circumference equidistant from a given point." The genus and the differentia are the ἱππόλεπτον that the definition distinguishes separately in the whole signified by the word "circle." The two aspects are fused together in the object expressed by the single word. They are divided from each other and expressed in separate notions by the definition. They are both contained in a confused manner in the one notion "circle" as expressed by the single word. The notion "circle" is immediately available to people in general. It can serve as a starting point. The mathematical definition of a circle is not immediately known to all. But it can be reached through a study of what is known under the notion "circle." In this way one proceeds from what is meant by the word to the components that are expressed in distinct fashion by the definition.

Does the illustration, interpreted in what seems its obvious meaning, serve the purpose for which it has been introduced? The overall purpose is to explain that natural philosophy, like any other science, has to proceed from what is more knowable for human cognition to principles and causes and elements that
are more knowable in themselves but are not immediately knowable to men. In natural philosophy these are found to be entirely formless matter and the first form received by it. The matter and the form are contained in the sensible things that human cognition first knows. They are fused together in the sensible thing, as genus and differentia are in the definition. From a study of the originally known concrete whole they are reached and expressed in separate notions through the procedure of natural philosophy. Just as the form is the actuation of the matter, moreover, so is the differentia the actuation of the genus (Metaph. H 6,1045a23-35). The analysis of definition into genus and differentia is in fact used in the Metaphysics (Z 12,1037b8-1038a35) as an approach to the study of the composition of matter and form in sensible substances, and the problem dealt with in their regard is characterized (b9-10) as helpful for the inquiries about substance. In the meaning of a concrete whole analyzed into its logical elements, therefore, the illustration of the word and the definition is quite what should be expected in Aristotle as an approach to the analysis of a physical whole into elements or principles or causes.

Ross (Aristotle's Physics, pp. 457-458), however, states that this interpretation "seems impossible." Ross, it will be remembered (supra, p. 2), had identified the "universal" in this context as generic knowledge, for instance the knowledge of something as an "animal." The procedure, then, would be from the general characteristic as the starting point to the specific traits as the principles or elements, for example from "animal" to "horse" or "cow." In this understanding of the procedure, the genus cannot be one of the elements reached by the scientific inquiry. As the starting point, it is expressly contrasted with the elements that are reached as a goal. Hence it seems impossible for the elements in this illustration to be the genus and the differentia that make up the definition.

What alternative does Ross offer? He acknowledges (ibid.) that the analysis of a genus into its species will not do here. That is not at all the business of definition, but rather of logical analysis. But, Ross claims, the distinguishing of the various senses of an ambiguous term will serve the present purpose, and will provide the only interpretation able "to illustrate, even remotely, what is is put forward as illustrating, viz. the transition from the recognition of the generic nature of an object to the recognition of its specific nature" (p. 458). "Circle" in Aristotle is in fact an ambiguous term. Besides a geometrical circle it is also used for an epic cycle (APo. I 12,77b33), and had still other meanings in everyday speech. Tannery's (art. cit., p. 471, n.5) suggestion that the $kaw\gamma\zeta\kappa\omega\rho\alpha\tau\alpha\delta$ distinguished by the definition are the circumference of the circle and the surface limited by the circumference, both referred to indifferently in Greek mathematics by the word "circle," seems to be in essentials the same as that of Ross.

There need be little question about the remote way in which this interpretation would allow the illustration to function. There is no immediate problem here about the ambiguous use of terms. Where such a problem has an essential bearing upon his theme, Aristotle is usually not slow in bringing it to the fore. To use definition as an illustration, and without any warning understand by it solely the definition of ambiguous terms, does seem farfetched. It is not paralleled in Aristotle's use of the analysis of definition in the Metaphysics (Z 12) as an approach to the analysis of sensible things into matter and form. Moreover, the definition of an ambiguous term, insofar as it can have a definition, does not in fact distinguish its various senses, any more than the definition of a genus distinguishes its different species. A definition of "healthy," or "medical," or "good," would merely provide a vague description that could extend to all the various senses. It would not distinguish the meaning that "healthy" has when applied to food from the meaning it has when applied to color. One may reject, correctly, the possibility of interpreting the illustration in the sense of the division of a genus into its species; but by the same token a division into the various meanings of an ambiguous term becomes inapplicable.
The second illustration is that children at first call all men fathers and all women mothers, and only later distinguish the one from the other. The relation of the one to the other parallels the relation between the components of a definition in the first illustration. "Man" and "woman" are more general, "father" and "mother" are more specific. Does the illustration mean, however, that a child commences with a specific knowledge of his father as father, and wrongly applies that knowledge in its fullness to men in general? Fourth century Greek children may have been precocious. But to credit their first impressions with full specific knowledge of what it means to be a father, is somewhat beyond the bounds of credibility. Does the illustration mean, then, that they first have the general impression of "man," express this incorrectly by the word "father," and only later get the specific notion to which the word "father" is restricted?

In the rout simile at the end of the Posterior Analytics (II 19,100b1-3), the procedure of human knowledge is clearly taken to be from the specific nature "man" through the generic nature "animal" to still higher genera, until the highest genus of all, the category, is reached. In one of a number of indiscriminate singulars that appear before human sensation the notion "man" is grasped, and then the other singulars are aligned with it one after another until the species is sufficiently established. Further, men are viewed in a panorama with horses, cows, dogs, cats, and so on, and in a corresponding way the genus "animal" is reached. Animals are viewed along with plants in a still wider picture, and the notion "something living" is attained as a broader generic nature. The process continues until the highest genus, "substance," is isolated. This is the way the Porphyrian tree has been climbed by generations of students of Aristotelian logic from Boethius on. On the other hand, the familiar illustration used by the Greek commentators went in the opposite direction. In seeing a distant object, one recognized it first as a body; then on getting closer to it one saw that it was something alive, on still greater proximity that it was a man, and finally that it was the individual Socrates or Alcibiades. The direction was from genera to species and singulars.

Each of the two ways of proceeding seems to have its legitimate place. From the logician's viewpoint, the singulars are first grouped into species, and then the species into genera, until the highest genus is reached. Epistemologically, however, a thing seems known first under the vaguest general notion of "something," and then distinguishing traits are gradually seen in it, as in the case of the object first perceived at a distance. Which of the two viewpoints is applicable here? Or are both on the same footing, as far as the present illustration is concerned?

The text reads as though "the one and the other" or "each of the two" (ἐνάτερον) into which the originally known confused whole is distinguished must be "men and fathers" or "women and mothers." Neither the more specific notion "fathers" nor the more generic notion "men" seems to be the concrete whole that is first known. They seem represented as concepts distinct from each other, the κατὰ ταὐτα that emerge from a differentiating knowledge of the objects initially grasped through sensation. The starting point is neither the one nor the other as distinct notions, but rather a vague object in which both are fused and neither is differentiated. Whether the child first becomes accustomed to call the vaguely known object "Dad" or "man" or any other name is beside the point. It is known first as a confused whole, and only later are the concepts of it as "father" and as "man" differentiated.

Interpreted in this way, the second illustration continues to press home the point made by the first. The κατὰ ταὐτα are the distinct generic and specific notions that were not differentiated in the initially known whole. κατὰ ταὐτα here cannot mean singular sensible things, but universal notions that set up the species and genera. The confusedly known object that serves as the starting
point is, however, universal in regard to them all. It contains them by being predicative of each, for each of the components is a "known object" or "something," or whatever one wishes to call the initially grasped whole in all its vagueness. With each of them is it identical, one by one, while remaining a unitary notion in itself. In this way it fully and univocally satisfies the Aristotelian requirements for universality, namely "as containing many things by being predicated of each, and, while a unit, by being them all severally" (Metaph. A 26, 1023b30-31; supra, p. 2). The starting point, accordingly, is neither the lowest species nor the highest genus, but an as yet undifferentiated object that is universal to both. It may therefore be referred to simply as "the universal," and the genera, differentiae, and species contained under it be called without hesitation its ἐν οὐσίᾳ.4

What Aristotle has been saying, then, is that the confused object initially known in sensation is universal in regard to its parts or components, and that from it one proceeds to the distinct knowledge of the components. That is what he says. But what does it mean, philosophically, in the present context? Sometimes one can determine satisfactorily enough what a Greek thinker is saying, and still encounter difficulty in assessing its correct philosophical meaning. In the opening chapter of the Physics, what is the exact bearing of the statement that one must proceed from the universals to their distinct components? It is brought forward as an introduction to a natural philosophy that proceeds from concrete sensible things to the matter and form that are the principles or causes or elements of these things. Is it merely a comparison? Does it just mean that as in the case of a universal you analyze a whole into its parts, so in natural philosophy you analyze the initially known sensible concretion into its distinct components? Possibly.

There are, however, some difficulties in accepting this view, plausible as it may appear at first sight. The notion of proceeding from the universal to its components is not introduced as a comparison, but as a consequence. It is introduced by ὅπου—wherefore. Because we first know concretions, we have to proceed from universals. Such seems to be the sequence of thought. It appears to mean that the concretions from which the procedure of natural philosophy commences will somehow remain universal in regard to their principles and elements. Hence would arise the necessity of the elaborate explanation through the examples of the name and the definition, the fathers and mothers and the men and women.

Secondly, the principles reached by the procedure in natural philosophy have to be in themselves more knowable than the concretions from which the procedure started. This requirement is stated expressly in the opening chapter of the Physics. The principles reached by the procedure are formless matter and its first form. But in itself the matter is unknowable (Metaph. Z 10,1036a8-9). As a principle for scientific knowledge of sensible things it will have to appear in a way that renders it more knowable than the observable things themselves. This cannot be the way in which it is present in the singular thing, where, taken apart from the form, it manifests no actuality or determination whatsoever. Yet it is knowable by analogy (Ph. I 7,191a7-12). As the bronze is to the statue and the wood to the bed, so is it to the substantial actuality of any body. What does this mean? It means that the basic concept upon which the concept of formless matter is elaborated, is the concept of a body, of the concretion originally known in sensation. It is the universal and vague concept of something corporeal. In this way the subject that receives the substantial form is represented as a
corporeal substrate that lacks all the determinations given by the categories. The notion is formed by taking the universal concept of "substrate" as seen in things like a bed or a statue, and by adding to the concept the negation of any formal determination. In this way it remains basically the concept of a body, the concept of the concretion that was first known in sensation. In regard to it the concept of the concretion remains universal. The basic substrate of bodies is conceived as something corporeal. But it itself, as one of the ἐννοιακὰ that come under this universal, is likewise represented in the status of a universal. As universal it can serve as a principle for scientific knowledge. It can be used universally as a principle for understanding all bodies. Accordingly it is more knowable in itself than the bodies it serves to explain, even though these bodies are more knowable to us.

The same considerations hold correspondingly for the formal principle of sensible things. It cannot be represented just in itself. Even though it is contrasted with matter, it has to be represented as something material. As the shape of a statue is related to the bronze and the shape of a bed to the wood, so the intelligible content of a substance is represented in relation to the formless matter that multiplies it in the many individuals of a species. The concept is basically that of a shaped or formed body with the negation of all substrate added as its distinguishing feature. The concept of something corporeal remains basic to it. The vague notion of the object originally known in sensation remains universal to it.

Viewed in this perspective, both the principles that are reached by the analysis of sensible things in natural philosophy come under the object initially known in sensation, as under a universal. Aristotle is saying that the procedure of natural philosophy is from bodies as known universally in ordinary sensation to principles that are conceived and known under further determinations of the original universal concept. One is proceeding from the first known universal to a distinct cognition of notions that come under it but are as yet undifferentiated in it, somewhat as the definition of a circle differentiates the notions signified confusedly by the word "circle," and children afterwards distinguish the notions of "father" and "man" that were undifferentiated in their earlier concept. What Aristotle has in mind, if this interpretation is correct, is that the confused object first grasped in sensation remains universal in regard to all further knowledge. The origin of all human knowledge in sensation would mean that all other objects have to be known basically in terms of concrete sensible things, with the necessary refinements and negations added. This would safeguard the Aristotelian conception of scientific knowledge from any atomism in the epistemological sense. The ultimate principles reached by the scientific procedure do not have to be given the status of individually known building-blocks from which the universe is constructed. Rather, any "correspondence theory" of truth that one might wish to attribute to Aristotle would have to refrain carefully from placing a photographic correspondence between the ultimate principles themselves and the concepts by which they are known. The concepts are not at all immediate replicas of them, but are elaborations of the confused object originally known in sensation and contained under it as under a universal.

V

The above interpretation gives the "universal" in the opening passage of the Physics the regular and univocal meaning that it has elsewhere in Aristotle. It also finds considerable importance in the use of the notion for the explanation of philosophical procedure at the beginning of natural philosophy, an importance that justifies the amount of space given it in the condensed summary of scientific method. The interpretation, it may be objected, uses
notions that are not mentioned in the passage, but are taken from other parts of the Aristotelian corpus. However, there does not seem to be much else that can be done in a situation of this kind. The passage itself is not self-explanatory. It caused trouble for the Greek commentators, and has continued to puzzle modern writers. Simplicius, apparently none too satisfied with his own explanation of the difficulty, concluded his discussion of it with the remark: "If anyone can give a more convincing account of it, let him please do so." 2 The same feeling, probably, is experienced by all who grapple with the passage, and a new account can be put forward only with trepidation. But if pondering over these lines of the Physics continues to help people think more deeply and more clearly about the nature of scientific method, then, without doubt, the text of Aristotle is still playing its vital role in western culture.

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Notes and References


2Ph. I 1,184a16-23. Cf. APo I 2,71b29-72a5; Metaph. Z 4,1029b3-12; E N I 4,1095b2-4.

3Ph. I 1,184a21-25. Cf. APo. II 19,100a3-b17; De An. III 8,432a3-10.

4Ph. I 1,184a23-24. In the Posterior Analytics, II 13,97b28-29, a statement that apparently says just the opposite may be found. See infra, n. 15.

5Metaph. Z 10,1035b27-30; 11,1037a5-10. In the Aristotelian text, the one thing seems described as known in two different ways. There does not seem to be any duplication of objects. The universal way of knowing the sensible thing, however, is seen as a duplication by Chung-Hwan Chen, "Universal Concrete, A Typical Aristotelian Duplication of Reality," Phronesis, IX (1964), 48-57.


7"It is a complete mistake to ask how concrete particular fact can be built up out of universals." Whitehead, Process and Reality (New York, 1929), p. 30.


10Note to Wicksteed tr., ad loc., in the Loeb Classical Library. In the instance from G C II 4,331a20, brought forward as an illustration, Καταλόγος seems used in its regular sense.


12Cf.: 


14 At M M II 11,1211a18-23 it is found used for notions as wide as those of the constituents of friendship--"the good, and being, and well-being" (Oxford tr.).

15 διὸ δεὶ ἀνὸ τῶν καὶ ἑκαστα ἐπὶ τὰ καὶ ὀλον
ΜΕΤΑΒΑΙΝΕΙ--APO. II 13,97b28-29.


17 Ibid., line 4.

18 ΠΡΟΧΕΡΟΣ ΚΑΙ ΝΑΙ ΠΟΛΛΑ--Ibid. p. 16.34-17.1.

19 References supra, n. 13.
