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I

THE PHILOSOPHICAL STUDY of induction begins with Aristotle. For him it was a fundamental mode of thought[1] that merited treatment for its importance in logic, scientific method, dialectic, and rhetoric.[2] Consequently, we would expect Aristotle to say just what he means by *epagoge*. However, Ross's survey of the passages where Aristotle uses the terms *epagoge*, *epagesthai*, and *epaktikos* shows that the words have a number of "shades of meaning,"[3] and sadly, the only passage that attempts to analyze the nature of *epagoge* is of little help.[4] Nevertheless, the central place of *epagoge* in the structure of Aristotle's thought remains, and the need for adequate treatment becomes more urgent.

The word 'induction' comes from the Latin rendering of Aristotle's word *epagoge*, and modern conceptions of induction bear a relation, frequently only a distant one, to Aristotle's *epagoge*. It would be fundamentally wrong to assume that Aristotle's notion is the same as any modern notion of induc-

[1] He once says, ἅπαντα . . . πιστεύομεν ἢ διὰ συλλογισμοῦ ἢ ἐξ ἐπαγωγῆς (*An. Pr.* 2. 23. 68b13–14).

[2] See W. D. Ross, *Aristotle's Prior and Posterior Analytics* (Oxford: Clarendon Press, 1949; hereafter cited as Ross), pp. 481–83, for references and passages on *epagoge* in *An. Pr.*, *An. Post.*, *Top.*, and *Rhet.*

[3] Ibid.

[4] It is normally taken as treating the special and inconsequential variety called "perfect induction," where, atypically, we know *all* the specific cases covered by the conclusion. On this view, Ross's account of why Aristotle treats this kind of *epagoge* seems adequate (p. 50; see below, n. 39). Engberg-Pedersen has recently proposed an interpretation that brings the example in 2. 23 much more closely into line with Aristotle's normal view of *epagoge* ("More on Aristotelian Epagoge," *Phronesis* 24 (1979): 311–14; see below, n. 39). But even on this interpretation, Aristotle's concerns in the chapter remain narrow and unhelpful for present purposes.

tion. This kind of anachronism would only lead to the conclusion that Aristotle did a wretched job of describing induction. Equally wrong would be to assume that he was struggling toward some modern conception of induction and to say that passages where what he says does not fit that conception show only that there was more work to be done.

Recent interpretations do not intentionally commit such blatant fallacies. Insofar as they are concerned to identify a unifying conception of *epagoge* in Aristotle, they attempt to stick closely to Aristotle. It remains a separate question to what degree Aristotle's conception of *epagoge* approaches or coincides with any modern notion of induction.

The temptation to look for a single unifying conception of *epagoge* in Aristotle is strong. Aristotle is sensitive to equivocation, and yet he never indicates that *epagoge* is equivocal. Indeed, his statement that all our beliefs come from either deduction (συλλογισμός) or *epagoge* (cited above, note 1) suggests strongly that he thinks of *epagoge* as something univocal. If there prove to be different kinds of *epagoge*, we should as far as possible try to see them as different varieties of the same thing. Snakes, dogs, and pussycats are all varieties of animal, but animal is not equivocal for all that.

In fact, this is the approach taken by recent commentators. Ross says that Aristotle "uses the word to mean a variety of mental processes, having only this in common, that in all there is an advance from one or more particular judgements to a general one."[5] More recently, T. Engberg-Pedersen found as the "root idea of Aristotelian *epagoge* in its full technical sense . . . something like 'attending to particular cases with the consequence that insight into some universal point is acquired' or 'acquiring insight into some universal point as a consequence of attending to particular cases'."[6] D. W. Hamlyn denies that *epagoge* is "merely the process of getting to the state of knowledge of the general or the universal," maintaining instead that it is a form of argument, in which "the learner comes to see the application of the general principle to a case as a result of constructing and using suitable cases."[7] I will follow this approach too, for I agree that there is a single underlying notion of *epagage* whenever Aristotle uses the word technically.[8]

The difficulty comes in trying to isolate a single basic conception covering the many occurrences of the relevant words. There seem to be cases

[5] P. 48.

[6] P. 305.

[7] "Aristotelian Epagoge," *Phronesis* 21 (1976): 171.

[8] This is to exclude such evidently nontechnical uses as ἐπάγεσθαι ποιητήν and ἐπαγόμενος τὸν Ὅμηρον. References and discussion in Ross, p. 482. Ross (p. 47; cf. pp. 481, 483) and Engberg-Pedersen (p. 303) deny that the occurrences of *epagoge* and *epagesthai* in *An. Pr.* 2. 21 and *An. Post.* 1. 1 are technical. This I dispute.

which do not fit the accounts that have been offered. Even if we agree that in some occurrences the words are not used technically,[9] we may still debate where the technical uses begin. Ross is forced to acknowledge non-technical uses in *Prior Analytics* 2. 21. 67a23; *Posterior Analytics* 1. 1. 71a21, a24; and *Topics* 2. 5. 111b38. He asserts that in these places, *epagoge* and *epagesthai* refer to "a deductive, not an inductive, process."[10] Engberg-Pedersen finds the same *Prior Analytics* and *Posterior Analytics* passages non-technical, claiming that "nothing . . . seems implied in the use of *epagoge* and *epagein* in these passages besides the simple idea of being led to see some particular point."[11]

Hamlyn bases a good deal of his discussion on the passage in *Prior Analytics* 2. 21 (I shall henceforth refer to this chapter as 2. 21 and to *An. Post.* 1. 1 as simply 1. 1), and not surprisingly the resulting interpretation of *epagoge* is one that accounts for the occurrence in question. Hamlyn also seems to think that it accounts for the occurrences in 1. 1.[12] But he should admit that his interpretation fails to account for other occurrences. On his view, *epagoge* in 2. 21 refers to the use of an example to point to a general principle, such that in understanding the example, one *ipso facto* grasps the general principle at work. Hamlyn gives as an example the procedure by which Socrates leads Meno's slave boy to the solution of a geometrical problem (*Meno* 82–85). Socrates uses a particular diagram to lead the slave to see that the square with double the area of a given square has its side equal to the diagonal of the given square, and therefore also to recognize that the same relation holds as a general principle in all cases.

Granted that this is what happens in the *Meno,* we may still doubt that all technical uses of *epagoge* and *epagesthai* in Aristotle refer to such a procedure. Many of the examples cited by Ross[13] fail to fit this model. Moreover, although Hamlyn makes much of the praise Socrates is accorded in the *Metaphysics* for using *epagoge,*[14] it is not clear that Aristotle is referring there to the feature of the *Meno* argument that Hamlyn discusses. In fact, the passage gives no clue which Socratic arguments proceed by *epagoge* or how to tell whether a given argument proceeds in that way. The *Metaphysics* passage itself needs interpretation in the light of what we decide on other evidence

[9] As in the first two examples in n. 8. Also *Metaph.* 1. 8. 989a33, cited by Engberg-Pedersen, p. 318, n. 8.

[10] P. 483.

[11] Pp. 303f. Engberg-Pedersen argues contra Ross that in these passages there is no reason to suppose that the ἐπαγωγαί envisaged are deductive.

[12] Pp. 173f.

[13] Pp. 481ff.

[14] P. 168. The *Metaph.* reference is 13. 4. 1078b28.

Aristotle means by *epagoge*. In fact, even if the *Meno* example runs along the lines Hamlyn gives, and even if Aristotle would have recognized it as an argument proceeding by *epagoge*, the fact remains that Aristotle describes other types of argument as well in terms of *epagoge*. Crucially, the example he gives in his only discussion of the nature of *epagoge* (*An. Pr.* 2. 23) is a different kind of argument. He also applies the vocabulary of *epagoge* and *epagesthai* to cases in which we recognize universals without making use of argument at all. More on this below.

I want to recommend a broader view of what Aristotle counts as an instance of *epagoge* in its technical significance, one that covers all the cases covered by Ross and Engberg-Pedersen and also the three occurrences of *epagoge* and *epagesthai* in 2. 21 and 1. 1. On this account, three of the four cases where Ross claims that the words refer to a deductive, not inductive, process prove to be unexceptional cases of *epagoge*. These are also three of the four occurrences Engberg-Pedersen finds of the words referring to neither induction nor deduction, but to "the simple idea of being led to see some particular point."[15] Moreover, neither Ross's fourth passage nor Engberg-Pedersen's fourth is able to stand on its own as a recalcitrant occurrence. Engberg-Pedersen's has already been dealt with,[16] and Ross's remaining passage, *Topics* 111b38, can refer to an inductive procedure just as well as to a deductive one and so is readily covered by the account I am proposing.[17]

II

It is time to turn to the passages in 1. 1 and 2. 21 on which the case for interpreting *epagoge* is to be built. It will be necessary to go through them carefully, since they have frequently been misinterpreted.

The passage in 1. 1 begins with a general statement:

> But you can become familiar [γνωρίζειν] by being familiar [γνωρίσαντα] earlier with some things but getting knowledge of the others at the very same time—i.e. of whatever happens to be under the universal of which you have knowledge. [71a17–19, Barnes's version]

What we are "familiar earlier" with is the universal, and what we "get knowledge of at the very same time" is "whatever happens to be under the universal." Aristotle makes his point clearer by giving a specimen case.

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[15] Pp. 303f.

[16] Above, n. 9.

[17] The *Topics* passage merely recommends that in some circumstances a questioner "make an *epagoge* to some conclusion by means of the view laid down and then attempt to refute it [the result of the *epagoge*], since if this is refuted, also the view laid down will be refuted." Nothing here points clearly to a deductive process.

For he had prior knowledge that every triangle has $2R$,[18] but that this figure in the semicircle is a triangle, ἅμα ἐπαγόμενος ἐγνώρισεν. [71a19–21, my version]

What he knew before was a universal truth holding for all triangles. What he "got at the very same time" is something falling under the universal, knowledge that the universal truth applies to some particular triangle. But did he not know that already?

Before ἐπαχθῆναι or getting a deduction perhaps we should say in one way he knew, but in another way he did not. For if he did not know without qualification whether it is, how did he know without qualification that it has $2R$?[19] But it is clear that in one way he knows, since he knows universally, but he does not know without qualification. [71a24–29, my version]

He knew that all triangles have $2R$ and knew of the figure in the semicircle, but he did not know that that figure is a triangle, and so he was not in a position to form the deduction

All triangles have $2R$;
This figure is a triangle;
Therefore, this figure has $2R$.

Nor did he have any other way of knowing without qualifucation that this figure has $2R$.

Aristotle's point is very simple. As soon as the person recognized that this figure is a triangle, he came to know without qualification that it has $2R$. And this is the sense to be found in the sentence, "that this figure in the semicircle is a triangle, ἅμα ἐπαγόμενος ἐγνώρισεν." Thus ἐπαγόμενος will refer to realizing that it is a triangle, and ἐγνώρισεν to realizing that it has $2R$.[20] Grammatically this makes "that the figure in the semicircle is a triangle" depend on ἐπαγόμενος (we might paraphrase "as soon as he was *led on* to see that the figure in the semicircle is a triangle") and leaves the object of ἐγνώρισεν to be supplied from the context, namely, "that this figure in the semicircle has $2R$," or "that this triangle has $2R$."[21] This interpretation is confirmed by 71a26–9,

[18] I shall use this abbreviation for the attribute of having angles equal to two right angles.

[19] I take ἁπλῶς with ἤδει. Aristotle's point is precisely that "we must admit that in one way he knows, but in another way he does not" (71a25f.). In a qualified way he knows, but not unqualifiedly. cf. ἁπλῶς δ' οὐκ ἐπίσταται (71a28–29).

[20] Γνωρίζειν is also used of coming to know the truth of propositions at 71a17, a23.

[21] Engberg-Pedersen takes this differently (p. 303), saying that Aristotle's point is that if we know in advance the general principle that every triangle has $2R$, we can come to see that this figure in the semicircle is a triangle at the same time as we are led by *epagoge* to see that it has $2R$. This is grammatically acceptable but does not fit the context. 71a24ff. tells against this interpretation, as does the fact that the general principle that every triangle has $2R$ licenses the inference from "this figure is a triangle" to "this figure has $2R$," but not from "this figure has $2R$" to "this figure is a triangle," as Engberg-Pedersen requires.

which refers to the results of both these pieces of reasoning. The result of recognizing that the figure is a triangle is unqualified knowledge that the triangle exists, and as a result of this new knowledge and our previous knowledge that all triangles have $2R$, we learn unqualifiedly that *this* triangle has $2R$.

Thus there are three facts in play: (*A*) the previously known universal fact (all triangles have $2R$); (*B*) the new knowledge that a particular item falls under the universal term (*F* is a triangle); (*C*) the new knowledge that results from applying *A* to *B* (*F* has $2R$). These three kinds of facts are also in play in the original, general description of the phenomenon (71a17–19): "You can become familiar [with *C*] by being familiar earlier with some things [*A*] but getting knowledge of others [*B*] at the same time [as *C*]."

On the reading I am proposing, ἐπαγόμενος refers to the recognition that a particular falls under a given universal (that *F* is a triangle). The same interpretation holds for ἐπαχθῆναι. 71a24–26 means:

> Before spotting the particular as falling under the universal [i.e., that *F* is a triangle] or getting the deduction [all triangles have $2R$; *F* is a triangle; therefore *F* has $2R$], perhaps we must admit that in some way he knew [that *F* has $2R$] but in another way he did not.[22]

In 2. 21 the context of the discussion begins at 67a8, and the example is introduced at a13.

> . . . *A* is $2R$, *B* stands for triangle, and *C* for a perceptible [i.e., particular] triangle. Someone might suppose that *C* does not exist, while knowing that every triangle has $2R$. So he will simultaneously know and not know the same thing. For knowing that every triangle has $2R$ is not a single thing, but in one way it consists in having the universal knowledge [or, in having the knowledge universally—τὴν καθόλου ἐπιστήμην] and in another way, the individual knowledge [or, in having the knowledge individually—τὴν καθ' ἕκαστον]. And so, he knows that *C* has $2R$ by the universal knowledge, but not by the individual knowledge. And so he will not know opposites. . . . For nowhere does it happen that we have prior knowledge of the particular, but ἅμα τῇ ἐπαγωγῇ we get the knowledge of particulars[23] as if by recognizing [ἀναγνωρίζοντας] them.[24] For some things we know straight off—e.g., that it has $2R$, if we see that it is a triangle, and similarly for the other cases. [67a13–26]

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[22] This interpretation goes against that of Ross, who takes ἐπαγόμενος and ἐπαχθῆναι as referring to the application of the general principle to the individual case (p. 47). Also Hamlyn, p. 170. K. von Fritz, "Die ἐπαγωγή bei Aristoteles," in *Grundprobleme der Geschichte der antiken Wissenschaft* (Berlin: de Gruyter, 1971), pp. 640f., says that in this passage ἐπάγειν concerns the application of a general principle to a particular case, but he then paraphrases ἅμα ἐπαγόμενος as "in dem Augenblick in dem er es als Dreieck erkennt," which is the way I wish to take it.

[23] Κατὰ μέρος. This expression is equivalent to καθ' ἕκαστον. See *An. Post.* 1. 24.

[24] The grammatical object of ἀναγνωρίζοντας must be supplied from the context and could be "that *F* has $2R$" at least as easily as "that *F* is a triangle." On the latter view it is use

In the penultimate sentence, it would be unreasonable to take "prior knowledge of the particular" as covering cases of simple acquaintance. We certainly can and frequently do have acquaintance with individual cases before realizing that they are individuals falling under a certain kind. Aristotle is not saying that as soon as we catch sight of a triangle we know that it has $2R$; he is saying that we know it to have $2R$ as soon as we spot it *as a triangle*. I take it that his point is that we never have individual knowledge (in the sense used above—of a general principle qua applying to an individual) before seeing that the individual falls under the kind covered by the general principle, but that we do get the full knowledge that comes from applying the general principle to the individual case as soon as we see (or simultaneously with seeing) that the individual does fall under the kind.[25]

The contrast between universal knowledge and particular knowledge in 2. 21 is different from that between knowing universally and knowing without qualification in 1. 1. In 2. 21 the distinction is between two ways of knowing that every triangle has $2R$; in 1. 1 it is between two ways of knowing that the particular figure has $2R$.

Nevertheless, the example is used to make the same point in both passages.[26] In its light the penultimate sentence of the 2. 21 passage must mean:

> It never happens that we have the knowledge which comes from applying a general principle to an indvidual case [F has $2R$] before we have knowledge of the individual case [F is a triangle]. But immediately on seeing that F is a triangle we get such knowledge[27] [F has $2R$], as if we recognized it.

Here too *epagoge* refers to realizing that a particular falls under a universal (see 1. 1. 71a18–19), or recognizing the universal that is in the particular cases (see *An. Post.* 2. 19. 100a7–8).

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just like γνωρίζειν and γνωρίσαντα in 1. 1 (71a17, 21). On the former, Aristotle is claiming that the *epagoge* that leads us to see that F is a triangle enables us to recognize that F has $2R$.

[25] This interpretation agrees with that of Engberg-Pedersen, p. 303.

[26] Hamlyn (pp. 170f.) sees the passages as making different points. "The example of the triangle immediately suggests that the immediate knowledge, the recognition, is of the fact that a particular falls under a general principle or description. Seeing a triangle is *ipso facto* knowing that it is a figure of a certain general kind. If we put this into relationship with the exposition of the doctrine of recollection in the *Meno*, we recognise that particular figure as the one which . . . (that square as the one which has an area twice that of a given square). And he is saying that one recognises it immediately without any foreknowledge being presupposed along with epagoge." But the passage makes it quite clear that there *is* foreknowledge. As in 1. 1, there is no foreknowledge of the individual case, but there is of the general principle. This fact is fatal to Hamlyn's use of the passage to support his view that for Aristotle *epagoge* is the use of an example to come to know a general principle, such that in understanding the example one *ipso facto* comes to understand the general principle. There is simply no question here of discovering the principle, but only one of applying it.

[27] Ἐπιστήμη here as normally in Aristotle is used of propositional knowledge.

III

Γνωρίζειν and its compound ἀναγνωρίζειν are associated with *epagoge* and *epagesthai* in these passages. The same association is found in *Posterior Analytics* 2. 19, which asks how the principles of sciences come to be known (γνώριμος) and what the state is that knows them (ἡ γνωρίζουσα ἕξις) (99b17–19) and which says that we must come to know γνωρίζομεν) the primary things[28] by *epagoge* (100b4). The relevant part of Aristotle's account there (especially 100a15ff.) should be read as identifying the cognitive states (ἕξεις) we pass through in coming to spot universals in particulars, not as explaining the psychological or physiological mechanism by which we form concepts in our mind, by some sort of deposit or condensation of sense impressions.[29] In this chapter Aristotle is presumably interested in how we come to know the universals and principles *for the first time*, and it is natural for him to use γνωρίζειν and related words to refer to the acquisition of this knowledge.

Aristotle recognized that a person must be acquainted with a universal in order to classify particulars as falling under it. At 67a25 when he says "if we see that it is a triangle," the context shows that we are already acquainted with the universal 'triangle'. Contrast *Posterior Analytics* 1. 31. 87b39–88a2:

> Even if we were on the moon and saw the earth acting as a screen, we would not know the explanation of the eclipse. For we would perceive that it is now in eclipse, but not generally why. For perception was not of the universal.

Here the context indicates that the universal has not yet been grasped. We do not automatically classify things we perceive under universals; this happens only after we have come to know the universal for the first time (in the language of *An. Post.* 2. 19, when one of the indiscriminables has made a stand, or has come to a stop), and *Posterior Analytics* 1. 31 explicitly concerns a case where we have not done so. Recognizing an individual as falling under a universal therefore involves more than simply perceiving it; it is a matter of perceiving it in a certain way, a way for which prior acquaintance with the universal in question is not a sufficient condition, as 1. 1 shows: even if we are acquainted with the universal, we may fail to realize, for example, that the figure in the semicircle is a triangle.

Coming to know that a given particular falls under a universal we already know is different from coming to know the universal in the first place. But

[28] The debate whether these are the principles of a science or the most general terms found in a science does not affect the present discussion.

[29] See J. M. LeBlond, *Logique et méthode chez Aristote*, (Paris: Vrin, 1939), pp. 131ff., for this kind of account.

since these are both cases of gaining knowledge, it is natural to use γνωρίζειν to apply not only to the second (*An. Post.* 2. 19) but also to the first (1. 1, and possibly ἀναγνωρίζειν in 2. 21).

Similarly, in *Posterior Analytics* 2. 19 it is by *epagoge* that we are said to come to know the primary things for the first time, and in 1. 1 and 2. 21 *epagoge* and forms of *epagesthai* are used for coming to know particulars as falling under a universal *that we already know.*

IV

Four sorts of cases occur, depending on whether a person (1) is coming to know the universal for the first time or (2) knows it already and is recognizing an individual as falling under it, and whether (1) and (2) happen (*a*) immediately, without reflection, on his perceiving a single instance, or (*b*) not immediately, but as a result of reflecting on or reasoning about one or more perceived instances.[30] Aristotle recognizes that (1*a*) can take place (*An. Post.* 1. 31. 88a12–17, 2.2. 90a24–30) as well as (1*b*) (e.g., *An. Post.* 2.19. 100a3ff.; *An. Pr.* 2. 23). It seems plain enough that he is willing to call both (1*a*) and (1*b*) *epagoge* (e.g., *An. Post.* 1. 18. 81a40ff. says that *epagoge* is the only way to learn universals, without any indication that only (1*a*) or (1*b*) is meant). Traditional accounts of *epagoge* see it applying this far but no farther.

But in order to make sense of 1. 1 and 2. 21, it must be extended to cover at least (2*b*.)In 1. 1 it seems that the person knew of the particular triangle, but not *as* a triangle. He knew of it as the figure in the semicircle but needed further reflection (perhaps aided by a geometrical proof) before he knew that it was a triangle. Aristotle elsewhere speaks of the phenomenon of knowing a universal but failing to recognize a particular as falling under it (*Metaph.* 1. 1. 981a21–22). Here he describes the advance to knowing the particular figure as a triangle in terms of *epagesthai,* which I take to be sufficient warrant for seeing it as an instance of *epagoge.* There is a clear connection with the root meaning of *epagoge,* "being led on." The person is *led on* from his initial awareness of the figure as the figure in the semicircle to awareness of it as a triangle. He needs to be "led on" to this knowledge because it was not apparent to him from the first.

It is not clear whether a similar interpretation applies to 2. 21. We are told that at the beginning the person did not know that the triangle was. The same is true for the example of 1. 1 (71a26). But 2. 21 does not tell whether

[30] Here we must take the contrast between a universal and its instances to cover both the individual-universal and the specific-general distinctions, if the account is to cover the examples given as paradigm cases of *epagoge* in *An. Pr.* 2. 23 and *Top.* 1. 12.

the person knew the triangle under a different description. We cannot say for sure whether the *epagoge* is a matter simply of seeing a triangle and immediately spotting it as a triangle (2*a*) or is a case like the example in 1. 1 (2*b*).

It must be one or the other, however, and principles of economy and common sense will prefer to see it as another (2*b*) case. It is easy enough to suppose that Aristotle had in mind circumstances similar if not identical to those found in 1. 1. On the other hand, if we suppose him willing to dignify cases of (2*a*) by the name *epagoge*, we have the uncomfortable consequence that when we see Fido for the first time and say "That's a dog," an *epagoge* has taken place.[31] But in many cases there is no distinguishable advance from seeing Fido to spotting him as a dog; we see him as a dog right off. And there is evidence that Aristotle would agree. In *Nicomachean Ethics* 6. 8 (1142a25ff.) he declares that *phronesis* is set opposite to *nous*. The latter has for its objects ὅροι which cannot be proved, while the former concerns the ultimate (particular), of which there is no scientific knowledge, but only perception.[32] He goes on to explain that he does not mean perception of the "proper sensibles"[33] but "the sort by which we perceive that the particular thing is a triangle." This is relevant to present concerns because it shows Aristotle's view that when we apprehend a figure as a triangle (we may assume that this is a (2*a*) case) we perceive it, grasp it directly, not as the result of an intellectual process that "leads us on" from seeing the figure to seeing it as a triangle.[34] And given that this is Aristotle's way of describing such cases, we do best to see the example of 2. 21 as another (2*b*) case.

The present interpretation will be confirmed if we show (2*b*) but not (2*a*) to share a common feature with (1*a*) and (1*b*) , a feature that would naturally lead Aristotle to call them all, but not (2*a*) , epagoge. It is clear that there is such a feature. In all three kinds of cases a person is led on to see one or more individuals as falling under a certain universal, or equivalently, to see a certain universal as covering one or more individuals. It is a matter of *coming to see* individuals not simply as individuals or individuals of some sort or another, but as *individuals of a particular sort*. We have seen that this description fits (2*b*) but not (2*a*). It also fits (1*b*) obviously and (1*a*) perhaps not so obviously. It might appear that (1*a*) must fail for the same reason (2*a*) fails, that there is no advance from perceiving the invidual to spotting it as falling

[31] This consideration is due to J. Barnes.

[32] See *An. Post.* 1. 31.

[33] Color, sound, flavor, etc. See *De An.* 2. 6.

[34] Also *An. Post.* 2. 19. 100a17ff.: ἡ δ' αἴσθησις τοῦ καθόλου ἐστίν, οἷον ἀνθρώπου, ἀλλ' οὐ Καλλίου ἀνθρώπου. See 1. 13. 78a34f.

under the universal but that right off we perceive the individual as falling under the universal. However, in the instances he gives of (1*a*) Aristotle makes it clear that even if it does not take any time or trouble to advance from perceiving the individual to perceiving it as falling under the universal, still the advance can be distinguished. At *Posterior Analytics* 1. 31. 88a13ff. he says that we know not simply by means of seeing but as a result of seeing (οὐχ ὡς εἰδότες τῷ ὁρᾶν, ἀλλ' ὡς εἰδότες τὸ καθόλου ἐκ τοῦ ὁρᾶν), and he is careful to distinguish perceiving the individual case from grasping the universal (νοῆσαι). *Posterior Analytics* 2. 2. 90a28–30 presents the same distinction between the act of perceiving and knowledge of the universal that arises from (ἐκ) the act of perceiving. Even if instances of (1*a*) and (2*a*) both occur quickly and effortlessly, Aristotle insists on analyzing (1*a*) by means of a distinction between perception and intellection that has no place in the account of (2*a*).[35]

V

On the present view, *epagoge* has a wider field of application than it does on traditional accounts. Nonetheless, it accords with Aristotle's definition of *epagoge* in the *Topics* as "the progress [ἔφοδος] from particulars to universals" and with the supporting examples (1. 12. 105a13–16).[36] Also it is quite close to a suggestion of Hamlyn, who several times connects *epagoge* with seeing a particular as an instance of a universal.[37]

Engberg-Pedersen interestingly suggests that the universal point we grasp via *epagoge* as the result of attending to particulars may be false.[38] For an

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[35] Wittgenstein's comments on "seeing as" (*Brown Book*, secs. 16, 18–19; *Philosophical Investigations*, II, xi) help illuminate some of the points I wish to make. He distinguishes between what I am calling (2*a*) and (2*b*). In the former we simply say, "I see a dog," or "It's a dog," and not "I see it as a dog." This last expression is appropriate to a (2*b*) case. Some remarks in the *De Anima* run along somewhat similar lines. Aristotle distinguishes (*De An.* 2. 6) between the "proper" objects of sight, e.g., pale, and its "incidental" objects, e.g., the son of Diares (418a21), man (3. 6. 430b28), and he says that we are never (2. 6. 418a12) or rarely (3. 3. 428b18–19) in error about the former, but that we make mistakes about the latter (3. 3. 428b20–22). Thus we cannot help noticing that what we see is pale (seeing it as pale), but we may fail to notice that it is a man or the son of Diares (to see it as a man or as the son of Diares). Wittgenstein also seems to indicate that (1*a*) cases can be cases of "seeing as" ("for we might never have seen a cube and still have this experience of 'seeing it as a cube' " [*Brown Book*, sec. 16]).

[36] It also agrees surprisingly well with Engberg-Pedersen's view of the "root idea of Aristotelian *epagoge* in its full technical sense," quoted above, p. 2. Admittedly the insight gained in (2*b*) cases (that the universal point covers the particular case at hand) is different from the kind intended by Engberg-Pedersen.

[37] Pp. 170, 181, 182.

[38] P. 308. I cannot agree with Engberg-Pedersen that *nous* for Aristotle is "a generalizing capacity or ability that is responsible for the fact that a universal point . . . may come to be present to the mind—whether the point be true or false" (ibid.). I do not see how to square this

example of a false proposition that Aristotle claims results from *epagoge* we need look no further than the assertion in *Prior Analytics* 2. 2 that all bileless animals are long-lived.[39] This allows for *epagoge* to produce false generalizations and misclassifications—something we would expect for one of the modes of thought characteristic of dialectic.[40] It also leads directly to a demand for criteria for judging whether a given conclusion based on *epagoge* is well based, and in this region we find the questions that have provoked most modern interest in induction.

Aristotle's interests in *epagoge* lay elsewhere. Had he been asked what kind of reasoning was found in a successful *epagoge,* I am doubtful whether he would have given a specific answer.[41] There are many ways by which a person may come to see a universal (whether it be a universal proposition or a universal term). Sometimes it may be by a formal syllogistic argument, as we find in *Prior Analytics* 2. 23, by most accounts. Frequently it may require a survey of several cases,[42] whether random or well chosen. At the other extreme, it may be simply a matter of seeing a single case and "anchinoetically" (see *An. Post.* 1. 34) seeing what is going on.[43] These examples are to be taken in context as applying to (1*a*) and (1*b*) cases, the first two to (1*b*) and the last one to (1*a*). All but the last can apply equally well to (2*b*). There are

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view wiht *An. Post.* 2. 19. 100bff., where *nous* is said to be always true and more precise than scientific knowledge. Moreover, I doubt that *An. Post.* 1. 31 supports Engberg-Pedersen's view. Engberg-Pedersen (p. 309) claims that *nous* is the capacity for "hunting down" (θηρεύσαντες) the universal (88a3–4), but in 1. 31 as elsewhere *nous* and νοῆσαι seem to refer to the grasp we gain of a universal after we have hunted it down. In the example given at 88a14–17, there is no "hunting," since the universal truth is grasped simultaneously (ἅμα) with perceiving the individual case.

[39] See von Fritz, pp. 659f. My point is not that Aristotle believed the premises or conclusion to be false, but that he would still count the argument as an *epagoge* even if it were shown to be flawed in these ways. Similarly, his observation that Socrates used *epagoge* (*Metaph.* 1078b28) does not commit him to accepting the details or the conclusions of those Socratic arguments.

[40] *Top.* 1. 12. Not that dialectic inevitably leads to error, only that it may, since unlike demonstration, whose premises are true, the premises of dialectic are only ἔνδοξα (*Top.* 1. 1. 100a27–30).

[41] I say this assuming that he would not insist that the analysis of *epagoge* he gives in *An. Pr.* 2. 23 satisfactorily covers the entire range of cases he elsewhere labels as *epagoge.* If Ross's view that Aristotle wrote *An. Pr.* 2. 23 when "filled with enthusiasm for his new-found discovery of the syllogism" is correct (p. 50), I am assuming that on sober reflection Aristotle would abandon his claim that all *epagoge* proceeds as he says in that chapter it does. On the other hand, Engberg-Pedersen's view that Aristotle is not formalizing the actual reasoning involved in every instance of *epagoge* but wishes to "bring out what we imply when on the basis of attending to a few particular cases we assert a universal proposition" (p. 313) is no obstacle to the present interpretation, since what is at issue here is not what we logically commit ourselves to in drawing a universal conclusion on the basis of particular cases, but the way we actually arrive at the universal conclusion.

[42] See *Top.* 1. 12. 105a14–16 for an *epagoge* of this kind.

[43] E.g., *An. Post.* 1. 31. 88a11ff.

other possibilities as well. For example, in discussing the example in 1. 1 I suggested that it might be a geometrical proof that leads the person to see the figure in the semicircle as a triangle. It might also be a matter of his staring at the diagram until the relevant truth dawns on him or of his following someone's suggestion to see it that way.

Such cases happen, and I think they happen often. What, if any, hidden intellectual processes are taking place on those occasions, is obscure to me. I am quite sure, however, that one thing not taking place at such times is an argument containing anything a modern logician or philosopher of science would call inductive power. The results of such "fertile vacuity" are sometimes sound and sometimes not. I do not of course claim that Aristotle has a clear analysis of any intellectual processes occurring in such cases, or even that any analysis is possible,[44] but only that those occasions fall under the wide notion of *epagoge* I believe 1. 1 and 2. 21 show he held.

That the present view of Aristotelian *epagoge* has not been proposed by earlier interpreters, I suspect is due to two considerations: the involved syntax of the occurrences of *epagoge* and *epagesthai* in 1. 1 and 2. 21 and a tendency to see Aristotelian *epagoge* as reasonably closely related to modern conceptions of induction.[45] Though the present interpretation of *epagoge* has connections with modern induction,[46] it is a significant step further removed than other interpretations. Nevertheless, consistency with Aristotelian usage is a more important criterion for an account of *epagoge* than congeniality with modern views.

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[44] Wittgenstein forbids such analysis (*Philosophical Investigations*, II xi, p. 204.

[45] Engberg-Pedersen charges Ross with this mistake (pp. 306f.).

[46] See above, p. 9.