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# *The Meaning of ΝΟΥΣ in the Posterior Analytics*

JAMES H. LESHER

In the *Posterior Analytics*, Aristotle confronted a problem that had troubled the members of the Academy and threatened his vision of scientific knowledge as an axiomatic system: if scientific knowledge is demonstrative in character, and if the axioms of a science cannot be demonstrated, then the most basic of all scientific principles will remain unknown. If the first principles are not actually known, but merely supposed to be true, then neither can we be said to know the conclusions which follow from them. Aristotle's response is that not all knowledge is demonstrative (72b 18-19)<sup>1</sup> but his first argument for this shows only that knowledge of first principles (if we have it) must be indemonstrable, not that we actually possess such knowledge.<sup>2</sup> In a fuller account at the end of Book II, we are said to possess νοῦς of first principles rather than ἐπιστήμη, but the abrupt manner in which νοῦς is there introduced makes it difficult to understand its nature or the grounds for claiming that we possess it. At the very least, the 'solution' seems hopelessly *ad hoc*: we possess νοῦς of first principles because we must have *some* knowledge of them, and no other kind of knowledge seems possible.<sup>3</sup> But even worse, the account seems inconsistent: first principles are said to be known through

<sup>1</sup> Except where noted, the Greek text is that of W. D. Ross, *Aristotle's Prior and Posterior Analytics* (Oxford, 1949), and for the other Aristotelian works, the texts of the Oxford classical series. The English translations appearing within double quotation marks are those of the Oxford translations, most notably that of G. R. G. Mure for the *Posterior Analytics*.

<sup>2</sup> The inadequacy of Aristotle's solution is reflected in Morrow's remark that "There is a certain disingenuousness in Aristotle's rather smug solution. To affirm that not all knowledge is demonstrable is to reject what he has given every show of affirming in the preceding chapter of this very treatise. Worst of all, the 'necessity' which he says compels us to assert that knowledge of immediate premisses is independent of demonstration is itself a consequence of the assumption that knowledge in the strict sense is possible – which is the very point at issue." (Glenn R. Morrow, "Plato and the Mathematicians: An Interpretation of Socrates' Dream in the *Theaetetus*", *The Philosophical Review*, Vol. LXXIX, No. 3 (July, 1970), p. 333.)

<sup>3</sup> Cf. *N. Ethics*, 1141 a 5-7: it cannot be either φρόνησις, ἐπιστήμη, or σοφία; that leaves νοῦς (λείπεται νοῦν εἶναι τῶν ἀρχῶν).

'induction' (ἐπαγωγῆ); i.e., from a series of observations of particular cases, but νοῦς is generally thought of as a faculty of intuition (or 'intellectual intuition' or 'intuitive reason') and it is difficult to see why we should need to proceed by induction when we possess such a faculty. Thus in spite of the empiricism which characterizes much of his account (the genetic account from 99b 34 to 100b 5) Aristotle seems to revert to a faculty which, at least as described by Plato, operates independently of sensory observation and yet enjoys an immediate and infallible vision of the real world.<sup>4</sup> In light of these defects, Aristotle cannot be said to have solved the problem of how first principles can be known, and given the centrality of this issue, his account of scientific knowledge must be judged very imperfect.

Such at least is a familiar and widely accepted picture of Aristotle's account, and it is not without foundation. But it is an over-simplification: too much is known about the meaning of νοῦς in pre-Aristotelian writings to think of it solely in terms of Plato's conception of νοῦς; νοῦς and νοεῖν occur too often in Aristotle's writings (both in the *Analytics* and elsewhere) to think of νοῦς simply as a contrived solution to this single problem; too much is said about the relations between perception, induction, and universal principles to summarily dismiss Aristotle's account for want of cogency; and the terms 'intuition' and 'intellectual intuition' have too varied a history to be thought of as simple equivalents of νοῦς or νόησις. It is my contention that a more detailed examination of νοῦς, νοεῖν and related notions supports a rather different understanding of their significance and of Aristotle's account of our knowledge of first principles. In particular, I wish to draw attention to those passages in which Aristotle seems to think of νοῦς, not simply in terms of grasping first principles, but more generally as 'insight', or the 'grasping of a universal principle', without regard to the position of the principle in the deductive system. Further, by pointing out the ways in which νοῦς relates to αἴσθησις, ἐπαγωγή, and καθόλου principles, I hope to show that νοῦς is not properly thought of as intuition or intellectual intuition, at least in any sense of these terms which would force us to distinguish νοῦς from ordinary empirical knowledge; and, finally, that the account of νοῦς of first principles at II,19 is neither *ad hoc* nor inconsistent with other features of Aristotle's epistemology.

<sup>4</sup> The opposition inherent in these two strains of II,19 is developed in detail by J. M. LeBlond, *Logique et Methode chez Aristote* (Paris, 1939), p. 131 ff.

## I

Previous accounts of the meaning of νοῦς in the *Posterior Analytics* have frequently rested on some mistaken assumptions relating its appearance here with its use elsewhere in Aristotle's writings, and in the writings of other philosophers. While it is desirable to draw on our information about other occurrences of these terms, we ought to be aware of the limitations of this approach, and the conditions which diminish its utility. It is sometimes assumed for example that the νοῦς of the *Posterior Analytics* is the same as the νοῦς of the *De Anima* account, and that lacking a clear explanation of νοῦς in the former passages, we can gain elucidation from the latter.<sup>6</sup> A survey of Aristotle's employment of νοῦς however reveals a wide range of likely meanings<sup>6</sup>, and in light of this diversity, one cannot simply assume a correspondence in the sense of νοῦς from one account to the next. Furthermore, the *Analytics* causes special problems since νοῦς is there understood, perhaps for the first time, as a state (ἔξις) of mind which compares and contrasts with ἐπιστήμη, the state of achieved scientific knowledge, and this is clearly different from the *De Anima* conception of νοῦς as 'mind', or even as the 'thinking part of the soul'.

Neither can one *assume* a correspondence between Aristotle's conception of νοῦς and Plato's.<sup>7</sup> In a number of instances, what Aristotle

<sup>6</sup> See for example the remark of M. De Corte: "L'*Organon* n'a pas pour mission d'établir cette preuve [that νοῦς is a more certain faculty of knowledge] dans toute son ampleur: le *Traité de l'Ame* que nous avons analysé plus haut le fait." (*La Doctrine de l'Intelligence chez Aristote* (Paris, 1934), p. 188). A similar correspondence is assumed in the accounts of Hamlin, *La Théorie De l'Intellect D'Après Aristote et Ses Commentateurs* (Paris, 1953), p. 11-13 and Le Blond *ibid.*, p. 136.

<sup>6</sup> Apart from the references to Anaxagoras' cosmic νοῦς, and the Divine νοῦς of *Metaphysics* Lambda, νοῦς appears as 'the thinking part of the soul' (*De Anima*, 429 a 10-11); 'mind' (*De Anima* 413 b 24-25); 'practical intellect' (πρακτικὸς νοῦς) and 'theoretical intellect' (θεωρητικὸς νοῦς, *De Anima*, Gamma 10); 'sanity' (ἔχειν νοῦς, as opposed to παραφρόνουν, *Meta.*, 1009 b 5); 'wisdom' or 'understanding' (ἔχομεν μᾶλλον νοῦν, *Prob.*, 955 b 22, *Rhet.*, 1418 b 35); 'native intelligence' (κατὰ νοῦν καὶ ἄνοιαν, *Hist. Anim.*, 610 b 22) as well as simply 'knowledge' (*N. Ethics*, 1143 a 35-b 5). Cf. Bonitz, *Index Aristotelicus* (Berlin, 1870), pp. 490 b 45-491 b 34.

<sup>7</sup> Cf. Le Blond's contention that νοῦς signifies a kind of knowledge which cannot be reconciled with an empiricist epistemology since "depuis Anaxagore, le νοῦς était considéré comme essentiellement actif, impassible" and because νοῦς has "une saveur Platonicienne" (*ibid.*, p. 131). It is hardly surprising that

means by a term is very different from what Plato meant by it. This is demonstrably so for terms like οὐσία, εἶδος, συλλογισμός, and even where there is a similarity between the two, for example the view that ἐπιστήμη requires some sort of reasoning or rationale, λόγος (*Theaetetus*, 202 d 7; *Post. Anal.*, 100 b 10), important differences remain. It is perfectly possible then for Aristotle to have as non-Platonic a conception of νοῦς as he does of οὐσία. This holds equally well for Anaxagoras' view and for any of Aristotle's predecessors who used the term, for while Aristotle is mindful of the past, he is not so beholden to it that he cannot choose to employ a term in a distinctive manner.

Yet the provenance of νοῦς is important for understanding Aristotle's view, for it would be unprecedented for Aristotle's use of a term to be totally artificial; that is to reflect nothing of its non-philosophical use or past employment. We ought then to bear in mind its history in order to keep in perspective the range of its uses and the contexts in which it appears, but it would be a mistake to assume from the outset that we shall find a single exact precedent for its use in the *Posterior Analytics*.

The earliest origins of νοῦς have been the subject of much debate, but the number of competing hypotheses is quite small: Von Fritz and Schwyzer derive it from an original root 'snu' meaning 'to smell or sniff', thus finding from the outset a perceptual orientation for νοῦς.<sup>8</sup> Others have opted for νέειν (to swim) and νεύειν (to nod), but these have not received wide acceptance.<sup>9</sup> More recently, νοῦς has been linked with νόμοι and νόστος (to return, the return) and derived ultimately from the Indo-European root \*nes, meaning 'a return from death and darkness'.<sup>10</sup> On this view, νοῦς arises out of the re-

if one begins with these assumptions about what νοῦς means by Aristotle's time, that one will be unable to connect νοῦς with perceptual experience except by "un veritable saut qui demeure injustifié..." (p. 138).

<sup>8</sup> Kurt Von Fritz, "NOUS and NOEIN in the Homeric Poems", *Classical Philology*, 38 (1943), pp. 79-93. Schwyzer, "Beiträge zur griechischen Wortforschung", in *Festschrift Paul Kretschmer* (New York, 1926), pp. 244-251.

<sup>9</sup> Kieckers (νέειν) and Prellwitz (νεύειν). See the latter's *Etymologisches Wörterbuch der griechischen Sprache* (Göttingen, 1905), p. xii, 315. The arguments against these etymologies can be found in Frame (see below).

<sup>10</sup> Douglas G. Frame, *The Origins of Greek NOUS*, Doctoral Dissertation (unpublished), Harvard University (April, 1971). A brief summary of Frame's thesis does not do justice either to the cogency of his argument, or to the wealth of linguistic evidence which supports the derivation of νοῦς from \*nes and νόμοι-

religious conception of the return to conscious life, but by the time of Homer νοῦς and νέομαι diverge, the former becoming simply ‘consciousness’ or the possession of a ‘mind’ and the latter becoming simply ‘return’, stripped of its original religious connotations. Whether or not Frame’s contention about νοῦς is correct in all its details, it does provide a plausible account of how νοῦς can come to mean ‘mind’ or ‘consciousness’ in Homer, and it is confirmed to some degree by the fact that Frei argues for the νοῦς – νέομαι connection on wholly independent grounds.<sup>11</sup>

Von Fritz argues that νοῦς in Homer has the basic sense of the mind’s “realization through perception” (νοῦς relating directly to νοεῖν, ‘to see’ or ‘to realize’), especially the realization of a situation of great emotional impact and importance. From this primitive sense derives<sup>12</sup> the sense of νοῦς as ‘plan’ or ‘planning’ (in response to the realization) and finally the volitional aspect of ‘wish’ or ‘intention’ relating to the attainment of some future state, and this pattern of related intellectual and volitional elements can be seen in other Greek ‘epistemic’ terms as well.<sup>13</sup> Even if we reject the view that the sense of νοῦς as ‘realization through perception’ is both temporally and logically primitive, there is still good reason to countenance a range of senses

νόστος. One of the striking features of Frame’s account is the summary of the collocations of νοῦς and νέομαι in the *Odyssey*, reinforcing the claim for an original union. By the time of Homer, νοῦς no longer meant the return itself, and faced with the inherited formulaic conjunction, Homer interprets νοῦς as the ‘means for return’; e.g., Odysseus’ return through the use of his νοῦς.

<sup>11</sup> P. Frei, “Zur Etymologie von griech νοῦς”, *Lemmata W. Ehlers* (Munich, 1968), pp. 48-57. Frei bases his contention on the occurrence of the root νέω found on certain Pylos tablets and the traces of the original sense of νοῦς found in the *Iliad*.

<sup>12</sup> Von Fritz takes the development to be temporal as well as logical (Cf. the summary in “NOUS, NOEIN and their Derivatives in Pre-Socratic Philosophy (excluding Anaxagoras)”, *Classical Philology* 40 (1945), p. 223), but others take it to be an atemporal union (Cf. Schottländer, “Nus als Terminus”, *Hermes*, 64 (1929), pp. 228-42).

<sup>13</sup> Cf. Bruno Snell, “Die Ausdrücke für den Begriff des Wissens in der vorplatonischen Philosophie”, *Philologische Untersuchungen*, XXIX (1924). The merits of the ‘temporal development view’, and the implications of this double aspect of Greek terminology for a supposed ‘Greek intellectualism’ are carefully evaluated by Michael J. O’Brien, *The Socratic Paradoxes and the Greek Mind* (Chapel Hill, 1967), esp. Chapter I.

of νοῦς in Homer,<sup>14</sup> and this diversity is reflected in other writings of the classical period.<sup>15</sup>

Yet there are occasions when νοῦς takes on a more specific description under the press of philosophical considerations. In Parmenides for example we find an emphasis placed on reasoning and inference (Cf. Fr. 7: κρῖναι δὲ λόγῳ), and while it is possible for νοῦς to be engaged in sense perception, we are enjoined not to follow that path. In the writings of other pre-Socratic philosophers however, νοῦς can be seen to act in close cooperation with the senses and to possess knowledge through their operation, rather than in spite of them (Cf. Xenophanes' Fr. B 24; Empedocles' Fr. B 2, B 4).<sup>16</sup>

With Plato, our picture of νοῦς and νοεῖν becomes more complicated. In Book VI of the *Republic*, Plato drives a wedge between νοῦς and sense perception, for although they are analogous in some respects, they are clearly of different objects: the objects of thought (τὰ νοούμενα) are to νοῦς (πρὸς νοῦν) as the objects of sight (τὰ ὀρώμενα) are to the faculty of sight (πρὸς ὄψιν), 508 c 1. Particular objects in the

<sup>14</sup> And thus to reject Boehme's contention that νοῦς always means something purely intellectual (*rein intellektuell*) and that νοεῖν is never to be understood as any kind of perception (*Die Seele und das Ich im Homerischen Epos*, Berlin, 1929).

<sup>15</sup> Cf. the listings of the Liddell and Scott *Greek-English Lexicon* (7th ed.): for νοῦς: (1) mind, perception, apprehension; (2) to have sense, be sensible; (3) the mind, heart; (4) one's mind, purpose; (5) the sense of a word. For νοεῖν: (1) to perceive by the eyes, observe, notice; (2) to think, suppose; (3) to think, contrive; (4) to conceive, deem of; (5) (of words) to have a certain sense, meaning.

<sup>16</sup> The evidence and arguments for the continued close relation between νοῦς and sense perception are clearly set out in Von Fritz' articles, "NOUS, NOEIN, etc." *Classical Philology*, 40 and 41 (1945 and 1946). The apposition of seeing, hearing and νοῦς which Von Fritz emphasizes (as in Xenophanes' B 24, οὖλος ὄρᾱ, οὖλος δὲ νοεῖ, οὖλος δὲ τ'ἀκούει) can also be seen in non-philosophical literature: in *Oedipus Rex* for example, Oedipus' curse of Teiresias takes the form of "blind in ear, νοῦς, eye, everything" (τυφλὸς τὰ τ'ᾠτα τὸν τε νοῦν τὰ τ' ὄμματα' εἶ, 370). Teiresias responds that this remark will continue to haunt Oedipus himself, and in light of Oedipus being the example *par excellence* of a man who fails to realize the significance of the situation, it is not difficult to grasp the reason for his blindness of νοῦς. It is possible, though not obvious, that this sense of perceptual realization was understood in connection with some other sense of νοῦς, as, for example, a sign of a man's wisdom or intelligence. Burnet at one point suggests that a man who possesses practical wisdom (φρόνησις) can also be said to possess νοῦς, since "everyone knows that a man who can see the right thing to do is said νοῦν ἔχειν" (*The Ethics of Aristotle* (London, 1900), p. 280), but this connection is speculative.

phenomenal world are seen but not apprehended by thought (ὄρασθαί φαμεν, νοεῖσθαι δ'οὐ) and the single form for each sort of thing is the object of thought, but not seen (νοεῖσθαι μὲν, ὄρασθαι δ'οὐ, 507 b 9-10). The conception of νοῦς as a purely intellectual faculty making no use of information supplied by the senses receives its strongest statement here in the promotion of dialectic as appropriate to the exercise of νοῦς, the highest level of knowledge indicated in the account of the divided line (511 b-e).<sup>17</sup> Yet it would be a mistake to give an account of νοῦς and νοεῖν in Plato solely in terms of Plato's own explicit characterizations, for it is possible that his use of these terms may reveal aspects of their meaning which he either perceived but dimly or never noticed at all. This is apparently the case with his use of νοεῖν. While it is generally true that νοεῖν contrasts with verbs of sense perception (e.g. ὄραῖν), on occasion νοεῖν seems to be perceptual recognition or realization: at *Phaedrus* 229 c 4, Phaedrus reveals that he has 'never really noticed' the altar to Boreas by the side of the stream (οὐ πάνυ νενόηκα), and at *Timaeus* 37 c 6, when the father and creator sees (or notices) that the creature he had made was moving, he rejoices (ὡς...κινήθην αὐτὸ ...ἐνόησεν ... ὁ γεννήσας πατήρ). Similar perceptually oriented uses of νοεῖν occur at *Philebus* 24a and *Laws* 738 a 1, 952 b 9.<sup>18</sup> The contrast of ὄραῖν and νοεῖν which was characteristic of the *Republic* is clearly absent in the *Parmenides* remark that "that which appears to be one thing when seen from a distance and dimly (πύρρωθεν ὀρῶντι καὶ ἀμβλῶ) will turn out to be unlimited in number when seen close at hand and with keen vision" (ἐγγύθεν καὶ ὀξύ νοοῦντι, Cornford trans., 165 b 7-c 2). In discussing the way

<sup>17</sup> Cf. *Rep.* 511 c 1-2: "making no use whatever of any object of sense, but only of pure ideas moving on through ideas to ideas and ending with ideas" (Shorey trans.) (αἰσθητῶ παντάπασιν οὐδενὶ προσχρώμενος, ἀλλ' εἶδεσιν αὐτοῖς δι' αὐτῶν εἰς αὐτά, καὶ τελευτᾷ εἰς εἶδη.) Plato speaks of the highest state of knowledge both as νοῦς (e.g. 511 d 1) and νόησις (511 d 8). The intellectuality of the Platonic νοῦς is reflected in the headings in Ast: *ratio, mens, intelligentia* (*Lexicon Platonicum*, Vol. II (Berlin, 1908), pp. 396-7).

<sup>18</sup> The perceptual character of these 'observations' (as opposed to 'having observations to make' in the sense of 'expressing some opinions') is made clear at *Laws*, 951 d ff. where the man who has been sent out as an observer (ὁ θεωρός, 951 a 6) is directed to report to the council on what he has observed (θεωρήσας, 951 d 3, αὐτὸς νενοηκώς ἅττα, 952 b 9).

A similar perceptual role can be seen in ἐννοεῖν, e.g. at *Parmenides* 135 d 1: 'noticing' (ἐνενόησα) that Socrates is attempting to define Beauty and Justice without a preliminary training, and *Rep.* 360 a 4 when the shepherd 'notices' that there is a connexion between turning the ring inward and becoming invisible.



in which Socrates comes to posit the existence of Forms, Parmenides says, “When it seems to you that a number of things are large, there seems, I suppose, to be a single character which is the same when you look at all of them (ἐπι πάντα ἰδόντι); hence you think that largeness is a single thing... some one thing which thought observes to cover all the cases, as being a single character” (οὐχ ἑνός τινος, ὁ ἐπι πᾶσιν ἐκεῖνο τὸ νόημα ἐπὸν νοεῖ, μίαν τινὰ οὖσαν ἰδέαν, Cornford trans., 132 a-c). We are thus said to νοεῖν this single character in relation to all those instances of it, and this goes beyond the *Republic* account of νοεῖν as restricted to Forms and relations among Forms. The same cannot be said for νοῦς. Even in the late *Philebus*, Plato thinks of it as the purest, most accurate (58 d), and truest (61e) kind of knowledge in so far as it deals only with true being and never with becoming (59 d).

Thus even within the Platonic corpus, νοεῖν exhibits a range of uses, on some occasions designating a purely intellectual or theoretical activity (hence accurately characterized simply as ‘thinking’) while on others, the realization or recognition of some feature of one’s perceptual field, and this latter use is found commonly in pre-Aristotelian writings. While νοῦς in Plato (and Parmenides) seems restricted to purely intellectual tasks, this is not true elsewhere. Even when νοῦς is to be understood just as ‘mind’, there is ample evidence from Homer forward that one of the most characteristic functions of νοῦς in this sense is the realization of the import of a perceived situation or state of affairs.

Once this diversity is recognized, it should be less tempting to think that Aristotle’s use of νοῦς will be necessarily restricted to but one of its previous roles. Moreover, when one remembers that the Platonic νοῦς is closely tied to a special conception of dialectic and a dualistic metaphysics, neither of which Aristotle adopted, it will be especially implausible to think of the Aristotelian νοῦς as ineluctably Platonic.

## II

In the *Posterior Analytics* prior to II, 19, νοῦς is explicitly mentioned in three passages and clearly under discussion in a fourth. It is generally believed (and argued in greatest detail by Ross) that νοῦς is to be understood throughout as “intellectual intuition, which grasps only the most fundamental general principles” (p. 599), and νοῦς in these passages clearly admits of that interpretation. But it does not do so without ambiguity or difficulty. Several of Aristotle’s remarks about

νοῦς admit of an alternative understanding on which νοῦς is not restricted to the grasp of first principles but exhibited whenever from a series of observations of particular cases we grasp the universal principle at work in each case; and there are other passages which positively point in this direction.

In Aristotle's first attempt to solve the problem of how indemonstrable principles can be known at 72 b 18 ff., we are told that not all knowledge is demonstrative (οὔτε πᾶσαν ἐπιστήμην ἀποδεικτικὴν); that the first principles can be known (ἐπίστασθαι) even though they are unmiddled and indemonstrable ((ἄμεσα, ἀναπόδεικτα). Such then is his doctrine (ταῦτά τ' οὖν οὕτω λέγομεν), but he does not stop there:

...and in addition we maintain that besides scientific knowledge there is its originative source which enables us to recognize the definitions.<sup>19</sup>

Νοῦς is not mentioned, but since it is later characterized as 'the source of scientific knowledge' (88 b 36), it seems implicitly involved here. Ross identifies this originative source with the indemonstrable ἐπιστήμη of first principles, and identifies the ὅροι which νοῦς and indemonstrable ἐπιστήμη grasp with those very same principles (p. 515). It makes good sense to think of the axioms of a system as the source of the demonstrations and of the grasp of the former as the source of our knowledge of the latter. But that is not the only 'source of scientific knowledge' which would make sense. We must first of all acquire our first principles, and that activity of proceeding from 'truths prior to us to truths prior without qualification', i.e. induction, is explicitly mentioned in the following paragraph (72 b 28 ff.) as the alternative to demonstration.<sup>20</sup> Thus what Aristotle *might* mean is that in addition to ἐπιστήμη (understood as covering both demonstrable and indemonstrable ἐπιστήμη) we possess the capacity to grasp principles through induction, and the sense of ὅρος may be deliberately unspecified.<sup>21</sup> On this interpretation, νοῦς would not be restricted to the apprehension of first principles.

<sup>19</sup> καὶ οὐ μόνον ἐπιστήμην ἀλλὰ καὶ ἀρχὴν ἐπιστήμης εἶναι τινὰ φαμεν, ἢ τοὺς ὅρους γνωρίζομεν, 72 b 23-25.

<sup>20</sup> Repeated at 81 a 40, 92 a 35, and *Meta.* 992 b 31-33: μαθητόμεν ἢ ἐπαγωγῇ ἢ ἀποδείξει.

<sup>21</sup> Aristotle's use of ὅρος is very flexible, ranging from 'terms' (in this very passage at b 36) to 'propositions' to 'definitions' (Cf. Bonitz, 529b-530 a). The ὅροι which make up the set of first principles are of course varied, including the common axioms (e.g. Law of Non-Contradiction) as well as the definitions and hypotheses peculiar to the science (Cf. 77 a 30, 72 a 18, 72 a 16-24).

It is important to note however that even if we understand νοῦς more broadly, *one* of its jobs is to apprehend first principles (and hence it overlaps with ἐπιστήμη ἀναπόδεικτος). What is distinctive about νοῦς when taken more broadly is that this activity is seen to be only one instance, the one which occurs last in the order of discovery, of a general ability to ‘intuit’ principles or explanations of perceived phenomena. At 85 a 1 for example, the ‘unmiddled’ premiss is said to be ‘the unit’ of the syllogism, and ὁ νοῦς is said to be the unit of demonstration and scientific knowledge, and it is impossible not to believe that it is νοῦς of the unmiddled premiss which is the unit of scientific knowledge. One can consistently hold however that νοῦς of first principles is the unit of scientific knowledge *and* that νοῦς is not just, or not simply, apprehension of first principles.

A similar ambivalence can be seen in the contrast of νόησις with perception and knowledge of the universal at 88 a 5-8:

The commensurate universal is precious because it makes clear the cause, so that in the case of facts like these which have a cause other than themselves, universal knowledge (ἡ καθόλου) is more precious than sense perceptions and than intuition (νοήσεως). (As regards primary truths there is of course a different account to be given.)

The meaning of much of this is clear and unambiguous: the commensurate universal is the essential ingredient in scientific explanation since, for Aristotle, to explain a thing is to demonstrate a connection by means of a middle or causal factor (e.g. Why is Socrates mortal? Because Socrates is a man and all men are mortal.) This passage thus reflects Aristotle’s general view that the best kind of knowledge is that which reveals not only the *that* (ὅτι), but also the *why* (διότι), and that, in the Aristotelian scheme, is demonstration.<sup>22</sup> While perception is involved in this process (we acquire the universal as a result of a repeated number of perceptions, 88 a 3,14), we do not strictly speaking realize that some connection holds universally in the simple act of perception itself.<sup>23</sup> It is clear then why perception is

<sup>22</sup> The limitations and defects of Aristotle’s conception of scientific explanation (its preoccupation with syllogistic form and its commitment to the ‘necessary truth’ of its premisses) are well attested. What is less often mentioned is the way in which this system was taken over by medieval philosophers and scientists and adapted for use in their experimental investigations (Cf. A. C. Crombie, *Robert Grosseteste, and the Origins of Experimental Science* (Oxford, 1953), esp. Ch. II).

<sup>23</sup> οὐχ ὡς εἰδότες τῶ ὄρᾶν, ἀλλ’ ὡς ἔχοντες τὸ καθόλου ἐκ τοῦ ὄρᾶν, 88 a 13-14.

thought to be less precious than knowledge of the universal, but what of νόησις? We are told that *in cases of this sort* (where there is a middle term), ἐπιστήμη<sup>24</sup> is superior to νόησις, and Ross explains this by contending that there is no νόησις at all of subordinate principles (p. 599). But there is an alternative account possible. There may well be νόησις of subordinate principles which would still be inferior to ἐπιστήμη of them since ἐπιστήμη but not νόησις is knowledge of a universal principle *qua* demonstrated. On this reading, νόησις would be understood as the grasp of the universal principle based on the repeated observations of constant conjunctions.<sup>25</sup> Since there can be νόησις but not ἐπιστήμη of first principles, we would obviously have to reverse our ranking of νόησις and ἐπιστήμη in that context.

The relation between the two is also at issue in the later account at 88 b 33 ff.:

So though there are things which are true and real and yet can be otherwise, ἐπιστήμη clearly does not concern them: if it did, things which can be otherwise would be incapable of being otherwise. Nor are they the concern of νοῦς – by νοῦς I mean an originative source of scientific knowledge – nor of indemonstrable ἐπιστήμη, which is the grasping of the immediate premiss.

<sup>24</sup> Understanding ἡ καθόλου not simply as ‘the universal’ (τὸ καθόλου), but as ἡ [ἐπιστήμη] καθόλου. As Mure notes, this then provides us with a contrast between νόησις and ‘demonstration through the commensurate universal’.

<sup>25</sup> The only precedent for this interpretation known to me is to be found in Grosseteste’s commentary on the *Posterior Analytics*, and his account of 81a 37 ff. is an excellent gloss on the process of reaching the universal principle:

<sup>25</sup> This, therefore, is the way by which the abstracted universal is reached from singulars through the help of the senses; clearly the experimental universal is acquired by us, whose mind’s eye is not purely spiritual, only through the help of the senses. For when the senses several times observe two singular occurrences, of which one is the cause of the other or is related to it in some other way, and they do not see the connection between them, as, for example, when someone frequently notices that the eating of scammony happens to be accompanied by the discharge of red bile and does not see that it is the scammony that attracts and withdraws the red bile, then from constant observation of these two observable things he begins to form a third, unobservable thing, namely, that scammony is the cause that withdraws the red bile. And from this perception repeated again and again and stored in the memory, and from the sensory knowledge from which the perception is built up, the functioning of the reasoning begins. (*Commentaria in Libros Posteriorum Aristotelis* (Venice, 1494) i.14. Crombie trans.)

Ross, and others, have taken νοῦς to be identical with the indemonstrable ἐπιστήμη, in spite of the fact that the Greek οὐδέ...οὐδέ normally marks a strong opposition, and that the Bekker punctuation tends to separate νοῦς from indemonstrable ἐπιστήμη, and must be changed if we are to take the last clause ‘the grasping of the immediate premiss’ to be a gloss on νοῦς.<sup>26</sup> While it is possible to do so, it should be recognized that an alternative reading (Mure’s) allows us to take Aristotle to be contrasting νοῦς with indemonstrable ἐπιστήμη, and both of them from simple ἐπιστήμη.

None of these occurrences of νοῦς and νόησις point unambiguously towards a broader role, but there are others which do. Elsewhere in the *Analytics*, and in other writings of a similar vintage,<sup>27</sup> νόησις and other cognates of νοεῖν are employed in a manner inconsistent with the restriction of νοῦς and νόησις to the apprehension of first principles.

Those who argue for the ‘intuitive’ character of νοῦς point out that Aristotle often employs νόησις in the context of mathematical discovery, where notions like ‘intuition’ and ‘intuitive insight’ play a major role.<sup>28</sup> In the *Posterior Analytics* for example it is said that the formal fallacy is uncommon in mathematics since we are dealing with visible diagrams, and we can “see these middle terms with an intellectual vision” (ὄρᾶν τῆ νόησει, 77 b 31), and there are references elsewhere to the νόησις of the geometer (*Meta.* 1051 a 25) and the perception of intelligible individuals by an act of νόησις (*Meta.*, 1036 a 6). The *De Anima* speaks of to νοεῖν both points and instants (430 b 20), and this is reflected in the account of perceived time in the *Physics* as our discrimination (νοήσωμεν) of the ‘now’ as a temporal middle between

<sup>26</sup> The contrast comes out clearly in the Bekker text which Ross revises by deleting the periods after νοῦς and ἐπιστήμης and collapsing the three sentences into one:

ἀλλὰ μὴν οὐδὲ νοῦς. λέγω γὰρ νοῦν ἀρχὴν ἐπιστήμης. οὐδ’ ἐπιστήμη ἀναπόδεικτος·  
 Τοῦτο δ’ ἐστὶν ὑπόληψις τῆς ἀμέσου προτάσεως. (88 b 35-37)

<sup>27</sup> Taking the *De Anima* and the *Posterior Analytics* as fairly early, perhaps contemporary with parts of the *Metaphysics*, and followed by the *Physics* and certainly by the biological works and *Nicomachean Ethics*. The precise ordering is not essential to the argument.

<sup>28</sup> H. D. P. Lee, “Geometrical Method and Aristotle’s Account of First Principles”, *The Classical Quarterly* (April, 1935), pp. 120-211. Lee takes the relation of νοῦς to νόησις to be that of faculty to the exercise of the faculty, and this seems in general correct. At II, 19 however νοῦς is characterized as a ξῆσις like ἐπιστήμη, and not a δύναμις like αἰσθησις.

the extremes of past and future (219 a 25 ff.). While it is true that νόησις and νοεῖν seem on some occasions best understood simply as ‘thinking’ or ‘conceiving’<sup>29</sup>, these passages seem to mark off a particular kind of mental activity which is perhaps best characterized as ‘perceptual intuition’, the intelligent discrimination of some feature of a perceived object or situation, and we have seen precedents for this in Plato’s use of νοεῖν and elsewhere. Νόησις is then not to be understood simply as apprehension of first principles. But what do these cases of perceptual intuition have to do with the formation of the scientific syllogism?

There are two ways of describing the connection, but they zero in on the same activity. In a brief discussion of ‘quickness of νοῦς’ (ἀγχινοια) at 89 b 10-20, we are given several examples of seeing (ιδών) something happen coupled with the ‘realization’ of the significance of what has happened: a man “sees that the moon always has her bright side turned toward the sun and quickly grasps the reason” (ταχὺ ἐνενόησε διὰ τί, 89 b 12, Ross trans.), namely, that the moon takes its light from the sun. Employing forms of γνωρίζειν, he describes the case of seeing two men in conversation and realizing that one is trying to borrow money from the other, and the case of realizing that the cause of amity among a group of people is their common hatred of a third party (89 b 13-14). Ross says nothing about this passage, and it might be possible to dismiss it as unrelated to the nature of νοῦς in the system of scientific knowledge, ignoring the appearance of cognates of νοῦς and νοεῖν, were it not for the fact that what is happening in these examples is a paradigm of scientific discovery: seeing the extremes, and uncovering the middle which connects them: πάντα γὰρ τὰ αἴτια τὰ μέσα [ὁ] ἰδὼν τὰ ἄκρα ἐγνώρισεν, 89 b 14-15.

This schema for the expansion of scientific knowledge, producing scientific syllogisms by interpolating the middle or causal factor until we have reached premisses which no longer admit of further ‘packing’, is well attested in Aristotle’s writings<sup>30</sup> and it brings out a feature of syllogistic reasoning which is sometimes neglected:

<sup>29</sup> Cf. the contrast of νοῦς – νόησις and αἰσθησις at *De Anima* 427 b 17, and νόησις and ποίησις at *Meta.* 1032 b 15 ff.

<sup>30</sup> E.g. at 84 b 19 ff., 85 b 27 ff., 90 a 34-35. Aristotle also holds that science grows by the addition of terms at the extremes or laterally, but this may be explained, as Ross suggests, as holding true for a science which is already in possession of its first principles.

that we employ and construct syllogisms on the way to first principles, as well as from them.<sup>31</sup>

Scientific inquiry is not simply the search for the middle term, for while Aristotle occasionally recognizes singular causal explanations as appropriate (as at 89 b 12), in general his view is that universal demonstration is superior (85 b 24), and there are clear signs of νόησις as an integral part of the scientific activity under this description. After stating the relative value of perception, demonstration of the universal, and νόησις, Aristotle concedes that though we do not acquire knowledge simply through the act of perception, nevertheless certain demonstrations are made unavailable to us because of a failure of perception. If we were able to see passages in the burning glass, and the light passing through them, we would be able to see the reason for burning in this case and νοῆσαι that it must be so in all cases<sup>32</sup>, and this would be an instance of ‘extracting the universal from perception’ (88 a 14). This is an important passage because it puts the act of νόησις in the ongoing activity of scientific inquiry, progressing towards first principles (not reserved for the final grasp of them), and it establishes an important link between νόησις on

<sup>31</sup> Cf. the comment by J. H. Randall: “There is in the *Posterior Analytics* no concern with method and procedure: Aristotle’s gaze is fixed entirely on what a completed and perfected science is like.” (*Aristotle* (New York, 1960), p. 33).

Aristotle’s failure to be more explicit about the role of demonstration in scientific research has led some commentators, most notably Jonathan Barnes, to conclude that the *Posterior Analytics* is an account of how scientific knowledge should be imparted or taught, and “was never intended as an essay in scientific methodology” (“Aristotle’s Theory of Demonstration”, *Phronesis*, Vol. XIV, No. 2 (1969), pp. 123-152). A full reply to Barnes’ interpretation would require some comparison of the *Analytics* remarks about demonstration with Aristotle’s own methods of biological research, and lies beyond the scope of the present paper. However, if the account of νοῦς given here is correct, the connection between perceptual experience and the construction of demonstrations has been explained, and this counts against restricting the *Analytics* to an exercise in pedagogy. It is relevant to note that Barnes’ account of induction mentions only those cases in which a *person* teaches another by induction, and ignores those passages where Aristotle speaks of induction as extracting the universal from perception (Cf. 81 b 6 ff. “But induction is impossible for those who have not sense perception... neither can universals give us knowledge of [particulars] without induction, nor can we get it through induction without sense perception”).

<sup>32</sup> δῆλον ἂν ἦν καὶ διὰ τί καίει, τῷ ὁρᾶν μὲν χωρὶς ἐφ’ ἐκάστης, νοῆσαι δ’ ἅμα ὅτι ἐπὶ πασῶν οὕτως, 88 a 15-17.

the one hand and the 'extraction of the universal', i.e. induction, on the other.<sup>33</sup>

The relation between νοῦς and ἐπαγωγή turns out to be a typically Aristotelian one: there is one activity, grasping the universal principle, but it admits of various descriptions; to speak of it as an act of νόησις is to give an epistemological characterization, while to characterize it as ἐπαγωγή is to speak of methodology. This account of νοῦς and ἐπαγωγή coincides with Aristotle's view that experience provides us with principles which we then endeavor to structure within syllogistic form,<sup>34</sup> and it makes perfectly good sense of νοῦς as the 'source of scientific knowledge' since it is νοῦς which supplies us in general with such principles.<sup>35</sup>

### III

Νοῦς is not mentioned in the last chapter of Book II until near the very end, and this stylistic feature may have served to re-inforce

<sup>33</sup> The conception of induction as the grasping of the universal from particular cases is well attested: 81 b 2, it is impossible to θεωρῆσαι τὰ καθόλου except through induction; *Topics* 108 b 11 ff., we infer (ἀξιοῦμεν) the universal by induction based on similarities; 156 a, proceeding by induction from the particulars to the universal (also at 105 a 13, 156 b 14); *Soph. El.*, 174 a 34, ἐπαγαγόντα τὸ καθόλου. Grosseteste evidently held that νοῦς was involved whenever we made the leap from observation of phenomena to the explanatory theory (Cf. Cromble, *ibid.*, p. 57,71), but it is unclear whether he adopted this view as the correct interpretation of various passages in the *Analytics*, or because he himself saw the need for such a conception in his own account of scientific method.

<sup>34</sup> At 77 b 36-37 (and *N. Ethics* 1139 b 29) syllogism is said to proceed from universals (ἐκ τῶν καθόλου), and this is reflected in other passages where Aristotle speaks of first acquiring the principles, and then being in a position to demonstrate (*Prior Analytics* 46 a, *De Gen. et Corr.*, 316 a 5 ff.).

<sup>35</sup> This interpretation of νοῦς bears a superficial resemblance to the thesis put forward by Marjorie Grene that "The refinement of perception to make explicit the universal in the particular, the species in the specimen: this is the experience that underlies Aristotle's confidence about νοῦς." (*A Portrait of Aristotle* (Chicago, 1963), p. 112). But it differs in an important respect. I take her to be saying that Aristotle's success in his biological investigations led him to believe that the 'real essences' of things could be discovered, hence that ἐπιστήμη was obtainable, and therefore that there must be a faculty of νοῦς which grasps first principles. She does not, so far as I can see, opt for a broader understanding of νοῦς (consider for example her remark about νοῦς as "the end-point of Aristotelian induction and starting point of demonstration", p. 235).



the consensus that νοῦς occurs only at the last stage of scientific investigation. But there is little consensus about how this act of νόησις relates to the induction which precedes it. Perhaps νοῦς comes after the inductive operation has been completed and is that “final act of insight whereby after the experience of particular cases (ἐπαγωγή) we finally see the general principle involved.”<sup>36</sup> Or perhaps induction itself supplies us with the principles and then νοῦς somehow validates or sanctions them.<sup>37</sup> No matter which of these alternatives we adopt, it cannot be said that Aristotle makes the connection clear, at least when we confine ourselves to thinking of νοῦς as that flash of insight which concludes scientific investigation and inaugurates demonstration. If however we understand νοῦς more broadly, it will be possible to make sense of the relation between the genetic account which takes up most of the chapter and the account of νοῦς of first principles, and remove some of the mystery which has surrounded Aristotle’s account.

Aristotle begins his account by arguing that we cannot be said to grasp first principles by means of a faculty which we possess from birth in a fully developed form (for this would hardly escape our attention) but rather by means of a gradually acquired capacity originating from simple perception. The progression is summarized in this famous passage:

So out of sense-perception comes to be what we call memory, and out of frequently repeated memories of the same thing develops experience; for a number of memories constitute a single experience. From experience again – i.e.<sup>38</sup> from the universal now stabilized in its entirety within the soul, the one beside the many which is a single identity within them all – originate the skill of the craftsman and the knowledge of the man of science, skill in the sphere of coming to be and science in the sphere of being. (100 a 3-9)

One of the striking features of this passage (though somewhat obscured in Mure’s translation) is that *the universal* is said to be ‘the source of art and knowledge’ (τέχνης ἀρχὴ καὶ ἐπιστήμης), and in light of the

<sup>36</sup> H.D.P. Lee, *ibid.*, p. 122.

<sup>37</sup> This view was held by Grote, *Aristotle* (London, 1872), Vol. I, p. 375, and more recently by Randall (*Aristotle*, p. 46): “But those *archai* themselves are established and validated as *archai*, not by reasoning or demonstration, but by νοῦς...”.

<sup>38</sup> In light of the contrast between ἐμπειρία and art/scientific knowledge at *Meta.* 981 a 15, it is perhaps preferable to take ἐκ δ’ ἐμπειρίας ἢ ἐκ παντὸς κ.τ.λ. as “from experience, or rather from the universal now stabilized, etc.”

previous characterization of νοῦς as the ‘source of scientific knowledge’, one must ask whether *this* stage in the progression toward first principles is itself a function of νοῦς. We are given some assistance by the parallel explanation in the *Metaphysics* in which τέχνη (and hence ἐπιστήμη) is contrasted with ‘mere experience’. The latter deals with individuals (curing Socrates and Callias) while the former involve ‘distinguishing what holds for all persons of a certain sort’,<sup>39</sup> and this, as was seen at 88 a 16, is appropriately thought of as an act of νόησις.

The connection with νοῦς is strengthened when one places this characterization of the universal in context: what is being discussed from 99 b 18 forward is how first principles become known and what is that state of mind which is appropriate to them. So far we have reached only the level at which the universal has become stabilized, but Aristotle immediately *concludes* (δὴ) that these states (αἱ ἔξεις) are neither innate in a determinate form nor developed from higher states of knowledge, but from sense perception (100 a 10-11), and he does not in any later passage make a similar remark about the ἔξις which is the grasp of first principles. Indeed, the subsequent account, concluding that first principles are known by induction, is said to be merely a restatement (πάλιν εἵπωμεν) which will hopefully possess greater clarity (σαφῶς). If the state of mind in which the universal becomes stabilized were not νοῦς, but only some lower or antecedent state, then Aristotle would have inexplicably stopped short before answering the question which he set out to answer.

The same question arises with regard to his conclusion of the genetic account, that we must come to know the first principles by induction, *for that is how perception produces the universal*.<sup>40</sup> Is Aristotle saying that the grasping of first principles is to be understood in the same way as grasping the universal, or is he saying that the two activities are different but somehow similar or analogous; the first dealing with ‘generalization from particular principles’, the second with ‘concept formation’?<sup>41</sup> We are told that the first universal is present when one

<sup>39</sup> τὸ δ’ ὅτι πᾶσι τοῖς τοιοῖσδε κατ’ εἶδος ἐν ἀφορισθεῖσι, 981 a 10.

<sup>40</sup> δῆλον δὴ ὅτι ἡμῖν τὰ πρῶτα ἐπαγωγῇ γνωρίζειν ἀναγκαῖον, καὶ γὰρ ἡ αἴσθησις οὕτω τὸ καθόλου ἐμποιεῖ. (100 b 3-5)

<sup>41</sup> Cf. Ross’ remark that “he seems to describe the two processes as distinct and alike only in being inductive” (p. 675), and Tredennick’s: “What Aristotle goes on to describe is the formation of universal concepts rather than the grasping of universal propositions.” (Loeb translation of the *Posterior Analytics*, p. 254).

of the ἀδιαφόρων has ‘made a stand’, but it is uncertain whether τῶν ἀδιαφόρων are perceptible individuals or *infimae species*. I take them to be the latter,<sup>42</sup> but the real issue concerns the nature of the universal. One reason for thinking that what is going on here is not a matter of concept formation, in the sense of coming to understand the meaning of words like ‘man’, ‘animal’, is that καθόλου is not understood as ‘concept’ in the *Posterior Analytics*.<sup>43</sup> As a bare minimum, it is understood as “an attribute which belongs to every instance of its subject”<sup>44</sup> and on occasion, as also an attribute which belongs in every instance, essentially and as such<sup>45</sup>. Thus ‘to grasp the universal’ in the sense of καθόλου which is evident in the *Posterior Analytics*, is to grasp a universal principle (e.g. to see that all Xes are Yes, or that X is a Phi because X is a Psi, and all Psis are Phis). If this is concept formation, it is exemplified not by a man who is learning the meaning of the word ‘man’, but by the scientist who is developing a scientific definition of the nature of man by demonstrating certain attributes to inhere essentially, necessarily and universally in men.

Another indication of this is the parallel between this account of a progression from ‘lower universals to unitary universals’<sup>46</sup> (kind of animal, animal, and so on) and Aristotle’s examples earlier in the *Analytcs* of a progression in essential predications from lower ones to ‘unmiddled principles’:

But it has been shown that in these substantial predications neither the ascending predicates nor the descending subjects form an infinite series; e.g. neither the series, man is biped, biped is animal, &c., nor the series, predicating animal of man, man of Callias, Callias of a further subject as an element of its essential nature, is infinite. (83 a 39-b 5)

Now all existing things either (1) are such that they cannot be truly predicated in a universal sense of anything else (e.g. Cleon and Callias and anything which is individual and sensible), but other attributes can be so predicated of them (for each of the two examples just quoted is a man

<sup>42</sup> It is used in this sense at 97 b 31, and if Aristotle means what he says when he claims that the universal is obtained from a *repeated* number of perceptions, then it is simply false to say that the universal is present in the soul from the first perception of the individual.

<sup>43</sup> Though in the *Metaphysics* the universal is simply ‘that which can belong to more than one thing’ (1000 a 1).

<sup>44</sup> τὸ γὰρ ἀεὶ καὶ πανταχοῦ καθόλου φαμὲν εἶναι, 87 b 32-33.

<sup>45</sup> καθόλου δὲ λέγω ὃ ἂν κατὰ παντός τε ὑπάρχη καὶ καθ’ αὐτὸ καὶ ἢ αὐτό, 73 b 26-27.

<sup>46</sup> πάλιν ἐν τούτοις ἴσταται, ἕως ἂν τὰ ἀμερῆ στῆ καὶ τὰ καθόλου, οἷον τοιονδι ζῶον, ἕως ζῶον καὶ ἐν τούτῳ ὠσαύτως, 100 b 1-3.

and an animate being; or (2) are predicated of other things, but other things are not first predicated of them; or (3) both are themselves predicated of other things and have other things predicated of them (as 'man' is predicated of Callias and 'animal' of man)... We shall explain elsewhere that there is also an upward limit to the process of predication (ἵσταται ποτε); for the present let this be taken as assumed. (*Prior Analytics*, 43 a 25-37).

There is then a clear correspondence in the following questions: whether an infinite number of essential predications is possible, whether non-hypothetical demonstration is possible, whether there are an infinite number of middle terms, and whether we must reach some terms which are indivisible and unmiddled (ἀδιαίρεται, ἔν, ἄμεσος, 84 b 35-36).<sup>47</sup> And it is this progression which I think is present in Aristotle's mind when at 100 b 1 ff. he describes the process in which perception produces the universal and speaks of a 'stop' (ἵσταται) at the species of animal, and next at animal, and finally a stop (στῆ) when the unitary universals are reached. If so, then we are not being given an analogy between the grasping of the universal and of the first principles but an argument that the latter is a special case of the former: induction is the means by which we reach first principles because it is induction which in general supplies us with our knowledge of universal principles. So understood, the account of induction of first principles at 100 b 4-5 is a natural corollary to our interpretation of νοῦς and induction as complementary aspects of the same activity, and νοῦς as the kind of knowledge which we generally possess of universal principles.<sup>48</sup>

But some difficulties remain. In the final paragraph of II, 19, it is argued that it is νοῦς (and nothing else) which we possess of first principles, but there are some features of Aristotle's argument which make it hard to reconcile with the empiricism of the preceding genetic account. Νοῦς is characterized as being ἀκριβέστερον than any other kind of knowledge (100 b 8-9) and even ἀληθέστερον than ἐπιστήμη, and these qualities of unsurpassed 'accuracy' and 'infallibility' have

<sup>47</sup> Cf. also 72 b 22, 79 a 30.

<sup>48</sup> This correspondance is reflected also in Aristotle's use of γνωρίζειν in both contexts: 'knowledge depends on recognition (γνωρίζειν) of the universal' (Tredennick trans.), 87 b 38; καὶ τὸ καθόλου μὲν γνωρίζειν, *Meta.* 981 a 21; τὸ διότι καὶ τὴν αἰτίαν γνωρίζουσιν, *Meta.* 981 a 29. In the account of νοῦς at II, 19, forms of γνωρίζειν occur nine times (e.g. τὰ πρῶτα ἐπαγαγῆ γνωρίζειν, 100 b 4). Cf. also γνωρίζειν of the middle term at 89 b 12 ff.

been seen as the marks of a faculty of intuition<sup>49</sup> more at home in mathematics than in the natural sciences.

Yet in this very paragraph, *both* νοῦς and ἐπιστήμη are said to be always true (ἀληθῆ δ' αἰεὶ ἐπιστήμη καὶ νοῦς, 100 b 7-8), and it is hard to see how νοῦς can be more accurate and less fallible than a state of mind which is always true. In fact, Aristotle's use of ἀκριβέστερον and ἀληθέστερον point toward a different understanding of them than 'accuracy' and 'infallibility'. Grant distinguished five senses of ἀκρίβεια (and his list may be incomplete)<sup>50</sup> but there is one of its uses which seems especially appropriate for II, 19, and that is its role as an adjective describing a science which is most 'exact'; i.e. *most in possession of its first principles*.<sup>51</sup> On this account, we are not concerned with the 'accuracy' of νοῦς (for that is not its distinguishing feature) but with its capacity for grasping basic truths of the science. Unlike ἐπιστήμη, νοῦς is not limited to those propositions which admit of demonstration but can grasp the first principles themselves; hence ἀκριβέστερον.

A similar moral is to be drawn from the appearance of ἀληθέστερον. It is a general principle in Aristotle's epistemology and metaphysics that a thing is more of an X, or X to a greater degree, or a better X, when it is the reason why (αἴτιον) other things possess the property of X (*Meta* 993 b 24-25). Thus knowledge of first principles is a better kind of knowledge and first principles are themselves more knowable because they are the αἴτια for the knowledge of other principles. It

<sup>49</sup> Or variants of this: 'intellectual intuition' (Ross), 'mental intuition' (Allan), 'intellect' (Grote), 'intuitive reason' (Lee, Ross).

<sup>50</sup> Minuteness of detail, mathematical exactitude, definiteness, finished or polished performance (in the arts), metaphysical subtlety. *The Ethics of Aristotle* (London, 1885), Vol. I, p. 452. Chantraine mentions 'exactitude, parcimonie, être exigeant' (ἀκριβάζω), and derives the term from ἄκρος, εἰβω: to speak in the 'highest', most refined, most polished or exact manner (*Dictionnaire Etymologique de la Langue Grecque* (Paris, 1968), p. 51).

<sup>51</sup> The science possessing the greatest ἀκρίβεια is that which: (1) proceeds from first principles or from as near to them as possible (86 a 13-21, *Meta.*, 982 a 25-26), (2) deals both with fact and reasoned fact (87 a 31-32), (3) consists of the fewest basic principles (87 a 34, *Meta.* 982 a 27), (4) deals with principles which are prior and simplest (*Meta.* 1078 a 9-10). At a 10-11, he actually identifies the ἀκριβές with 'the simple' (ἀπλοῦν). At *N. Ethics*, 1141 a 10 ff. the inference goes the other way: wisdom must be the most 'finished' (ἀκριβεστάτη) form of knowledge (since it is ascribed to the most polished artists), and *therefore* (ἄρα) wisdom must be knowledge of both subordinate and first principles (μὴ μόνον τὰ ἐκ τῶν ἀρχῶν ... ἀλλὰ καὶ περὶ τὰς ἀρχὰς ἀληθεύειν.)

is also a consequence of this general principle that a principle is ‘truest’ if it is (1) always true, and (2) the αἴτιον for the truth of derivative principles (τὸ τοῖς ὑστέροις αἴτιον τοῦ ἀληθέσιν εἶναι, 993 b 27). Thus if both p and q are true and p implies q but not vice versa, then p is truer than q.<sup>52</sup> Thus the reason why νοῦς can be ‘truer’ than ἐπιστήμη is that it can grasp principles which are the αἴτια for other principles being true.<sup>53</sup> There is no sign that Aristotle’s point is that νοῦς is less fallible, or even ‘more infallible’ than ἐπιστήμη; the moral of both these characterizations of νοῦς is simply that it and nothing else is acquired of first principles.<sup>54</sup>

Whether Aristotle’s remarks about νοῦς elsewhere in his writings commit him to a conception of νοῦς as ‘intuition’ depends largely on what we take “intuition” to mean. If to intuit something is simply to have an insight or realize the truth of some proposition then certainly νοῦς will be intuitive knowledge and νόησις will be an act of intuition. If however we mean by “intuition” a faculty which acquires knowledge about the world in an *a priori* or non-empirical manner,<sup>55</sup> then it will be inappropriate to think of the Aristotelian νοῦς as intuition.

It is true that we can be said to νοῦσαι something to be true ‘sudden-

<sup>52</sup> The etymology of ἀληθής (true) from ἀ-ληθής (‘unhidden’, ‘unconcealed’) may help explain why the comparative ‘truer’ makes better sense in Greek than it does in English. Some propositions may be more informative (disclose more information or conceal less) than others, and hence be ἀληθέστερον.

<sup>53</sup> He does not say that νοῦς is restricted to first principles and hence must always be ἀληθέστερον, only that it is capable of this (ἀληθέστερον ἐνδέχεται εἶναι, 100 b 11-12).

<sup>54</sup> When understood in this way, the eliminative argument of 100 b 5-15 becomes not so much an argument for νοῦς of first principles, (since this is implicitly being asserted in the premisses by its characterization as ἀκριβέστερον and ἀληθέστερον), but an argument that νοῦς and νοῦς alone grasps first principles. This puts the weight of the argument (and I think properly so) on the genetic account of our knowledge of universal principles.

<sup>55</sup> Cf. Ewing’s remark on ‘intuition’ as a translation of ‘Anschauung’ in the first *Critique*: “[Anschauung] has no connection with the sense in which this word is most commonly employed in English today as meaning *a priori* insight not based on reasoning...” (A. C. Ewing, *A Short Commentary on Kant’s Critique of Pure Reason* (London, 1938) p. 17). Richard Rorty gives a helpful delineation of four senses of “intuition” in *The Encyclopedia of Philosophy*, ed. Paul Edwards (New York, 1967), Vol. IV, pp. 204-212. Of the four mentioned, the closest to the traditional view of the Aristotelian νοῦς is “knowledge of the truth of a proposition, but not preceded by inference”, but this omits the reference to the non-empirical character of such knowledge.

ly' (ταχύ) and not as the result of syllogistic reasoning, but this hardly suffices to mark off νοῦς from ordinary empirical knowledge. Νοῦς and νόησις are also found associated in Aristotle's writings with mathematics and dialectic, contexts which, at least in Plato, gave rise to a faculty of intuition in the strongest sense.<sup>56</sup> But this is misleading. Dialectic, in Aristotle, is a very weak counterpart to its Platonic analogue, and its method of proceeding from 'received opinions' (ἐνδόξων) is useful for reaching first principles only in so far as it is useful for detecting similarities which are the basis for induction of the universal (*Topics*, 105 a, 108 b). And we cannot gain much support from the role of νοῦς in mathematics, for Aristotle gives every sign of treating it and the natural sciences as alike in admitting of formalization and in method of discovery. It is by induction that knowledge is attained, and this is so, though to a lesser degree, even in mathematics (81 b). If he had developed a distinction between the kind of truth obtained in mathematics and in the natural sciences, or if, as Aquinas thought, he had conceived of first principles as 'self-evident' truths<sup>57</sup>, it might be easier to think of νοῦς as a kind of *a priori* knowledge. But he did not do so. He seems to think of the role of experience in the natural sciences, mathematics, and ethics as differing only in degree,<sup>58</sup> and he denies that the truth of first principles is simply a function of the meaning of the terms in them.<sup>59</sup> Νοῦς is not therefore properly viewed as intuition, at least in any sense of the term which would serve to distinguish νοῦς from ordinary empirical knowledge. The account of νοῦς of first principles which concludes the *Posterior Analytics* is therefore neither *ad hoc* nor inconsistent with Aristotle's empiricism; on the contrary, it is a consequence of it.

<sup>56</sup> Lee, *ibid.*, p. 120 ff.

<sup>57</sup> "But those immediate propositions are not made known through an additional middle, but through an understanding of their own terms", and "understanding [νοῦς] is the absolute and simple acceptance of a self-evident principle". *Commentary on the Posterior Analytics*, trans. F.R. Larcher (Albany, N.Y., 1970), p. 26, 126.

<sup>58</sup> Cf. Allan's remark: "What we miss, in Plato and Aristotle alike, is a clear statement of the contrast between necessary and empirical truth; for they both tone this down to a difference in degree." *The Philosophy of Aristotle* (London, 1952), p. 158.

<sup>59</sup> The primary and indemonstrable principles must be known "not only in the sense that we understand what is meant, but in the sense that we know them to be the case" (Ross trans., 71 b 31-33).

#### IV

Since Aristotle thinks of theoretical νοῦς as corresponding in some ways to practical νοῦς, (though they differ in their goals (*De Anima* 433 a 14) and deal with different types of principles (*N. Ethics* 1139 a 5-10), we ought to be able to check our account of νοῦς in the *Analytics* by a comparison with the role of νοῦς in practical affairs. For our purposes, it will be useful to isolate those occurrences of νοῦς and νόησις in ethical contexts, but because of the complexity of Aristotle's accounts of practical wisdom, deliberation, choice, and related topics, this concentration on νοῦς tends to give it an unnaturally large role. So let it be noted that νοῦς is not the sole determinant of action but functions along with desire, perception, imagination, calculation, cleverness, and a number of other factors in the Aristotelian scheme.

In Book VI of the *Nicomachean Ethics*, Aristotle comes close to saying that νοῦς is only of first principles: it is 'opposed to' (ἀντίκειται) φρόνησις, since νοῦς deals with the limiting principles while φρόνησις deals with the particular act to be done (1142 a 23 ff.); or even if there is νοῦς (or a kind of perception) of the particular act to be done, this still contrasts with the νοῦς involved in demonstration since there it grasps the first and invariable premisses (1143 a 35 ff.); and 'wisdom' is generally thought to be ἐπιστήμη of demonstrable truths plus νοῦς of the highest principles (1141 a 18 ff.) In each case however, Aristotle falls short of an unambiguous restriction. The 'opposition' between νοῦς and φρόνησις, if it exists at all,<sup>60</sup> quickly disappears by 1143 a 25, where these are said to converge to the same thing (εἰς ταὐτὸ τείνουσαι). The characterization of the νοῦς in demonstration and in practical deliberations occurs in a discussion of particular actions, which are 'ultimates', and in this context one might easily say that there is νοῦς of ultimates of both sorts (in both directions, ἐπ' ἀμφοτέρα)

<sup>60</sup> D. J. Allan has argued that ἀντίκειται here "means not so much 'is opposed to' as 'corresponds to, though with a difference'" (*Autour d'Aristote* (Louvain, 1955), p. 329). While ἀντίκειται does on occasion seem best understood as 'opposed' (as in *P. Anal.* 72 a 5 where the things nearest sense are said to be ἀντίκειται (at the opposite end of the spectrum?) to the greatest universals), it is difficult to so construe it here at 1142 a 25. After all, in this very passage, the φρόνησις of the particular is said to be like the perception in mathematics that the simplest constructible figure is the triangle, and mathematical perception is one of the roles of νόησις. Monan accepts Allan's reading (*Moral Knowledge and Its Methodology*, Oxford, 1968, p. 74 ff.); Joachim retains the opposition (*The Nicomachean Ethics*, ed. D. A. Rees, Oxford, 1951, p. 213).



without intending to imply that there is νοῦς only of the ultimates. Indeed, the point of a remark about both extremes may sometimes not only concern the extremes, but what lies *between* the extremes as well (e.g., in pain do we enter the world, and in pain do we leave it). It is also possible to speak of this role of νοῦς, perhaps in Aristotle's mind the most important role, as a component of wisdom without implying that this is its only role. So while these *Ethics* passages can at first sight be taken as supporting the traditional view, they admit of an alternative account.

And there are times when Aristotle indicates a broader role. We have already mentioned that νοῦς in practical affairs is seen as the recognition of the right thing to do in the specific case, and it is from such experience that our knowledge of universal moral principles is acquired. Those who have such experience, and whose undemonstrated 'sayings and beliefs' embody such principles are said to possess νοῦς (1143 b 8 ff.) since experience has given them an eye to see things correctly. Elsewhere this eye of the soul is said to be essential for discovering the good to be achieved (1144 a 20 ff.), and this 'insight' into the good is not only necessary for moral virtue in the strict sense but virtue is also necessary for it, since our νοῦς can be impaired by reckless behaviour. In the terms of the practical syllogism, νοῦς not only deals with the act itself which is the conclusion of the syllogism (from which universal principles are gained), but also relates to the grasp of the major premiss. It is generally correlated with the exercise of φρόνησις since the latter is manifested most clearly in men like Pericles who can see (θεωρεῖν) the good for themselves and others (1140 b 9-10). Φρόνησις is also, and perhaps more obviously, the ability to achieve the desired end, practical 'know-how', since it is also characteristic of the practically wise man to be good at deliberation, and this is concerned with finding the means to the end.<sup>61</sup> Here too it is νοῦς, the πρακτικὸς νοῦς, which is involved (*De Anima*, 433 a 10

<sup>61</sup> Among recent writers, it is D. J. Allen that is responsible for making clear the broader character of φρόνησις, allowing us to discard the view of φρόνησις as deliberation about means and never about ends (in "Aristotle's Account of the Origin of Moral Principles", *Actes du XIe Congres international de philosophie* (Amsterdam, 1953), Vol. XII, pp. 120-127). His argument is, briefly, that Aristotle's claim that the means to the end must be determined by φρόνησις does not imply that φρόνησις is involved only in the choice of means, and Allan cites passages to support a broader view. There is then a formal parallel between Allan's argument about φρόνησις of means and my argument about νοῦς of first principles.

ff., *N. Ethics*, 1139 a 31 ff.).<sup>62</sup> These passages depict νοῦς as operative in every phase of the practical syllogism, and there is a striking illustration of this, from an unexpected source, in the account of action in the *De Motu Animalium*:

But how is it that thought (viz. sense, imagination, and thought proper) is sometimes followed by action, sometimes not; sometimes by movement, sometimes not? What happens seems parallel to the case of thinking and inferring about the immovable objects of science. There the end is the truth seen (for when one νοῖσσι the two premisses, one at once ἐνόησε and comprehends the conclusion), but here the two premisses result in a conclusion which is an action - for example, one νοῖσσι that every man ought to walk, one is a man oneself: straightway one walks; or that, in this case, no man should walk, one is a man oneself: straightway one remains at rest... Now it is clear that the action is the conclusion. But the premisses of action are of two kinds, of the good and of the possible [i.e. the means]. (701 a 6-25).

Νοῦς can thus be seen to function in the practical syllogism in grasping both the major premiss, the universal judgment of the good, and the minor, that this is an instance falling under the generalization, or a means to it, and hence νοῦς is not confined either to the grasping of the first principles or the perception of the particular act to be done. This passage also reveals the clear parallel between the πρακτικὸς νοῦς and the θεωρητικὸς νοῦς; in the first case the perception of the end to be done and the means to it; in the second, the grasp of the principles of explanation and the completion of the syllogism. That insight, or grasp of the universal principle, acquired by induction from particular cases and constituting the source of scientific knowledge, is, as I have argued, what Aristotle means by νοῦς in the *Posterior Analytics*.<sup>63</sup>

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<sup>62</sup> This appearance of νοῦς in the *De Anima* seems sufficiently marked off from νοῦς as 'mind' or simply 'thinking' to include it here. For one thing, at 433 a 26, νοῦς is said to be always right, and it does not make much sense (though this is how the Oxford translator takes it) to think that what is being said is that 'mind is always right'.

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