



THE *APORIAI* OF INTELLECT IN ARISTOTLE'S *DE ANIMA* III 4

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RESUMEN

En este paper ofrezco una lectura global de *De Anima* III 4 de Aristóteles, en la que pretendo develar la rigurosa estructura argumentativa del capítulo. Así, muestro que el capítulo exhibe el típico patrón aristotélico de investigación filosófica: el establecimiento de los problemas básicos que han de ser resueltos, el camino dialéctico para la postulación de una hipótesis, la derivación, a partir de ella, de las características individualizantes relevantes del objeto (algunas de las cuales son ya manifiestas y explicadas como derivables de la hipótesis), y la emergencia de *aporiai* que *prima facie* parecen invalidar la hipótesis pero que finalmente posibilitan una comprensión más profunda de ella. Procuro clarificar la progresión especulativa del capítulo al considerar inicialmente el *Principio de Actualidad* como subyacente a su *Modelo de Asimilación* de la cognición (S conoce F si y solo si el principio cognitivo de S deviene F debido a un objeto conocido O que es F en acto). Aristóteles, además, deriva la no-mezcla a partir de la carencia de límites (*Asunción de Ilimitación*), que es una característica manifiesta del *nous*. De la no-mezcla deriva la *Separabilidad* (estas implicaciones se clarifican en la primera *aporia*), de la Separabilidad deriva la *Espontaneidad* y de la Espontaneidad la *Autointelección* del *nous* (clarificada en la segunda *aporia*). Aunque examino el capítulo completo, me enfoco específicamente en el valor teórico y metodológico de la introducción y discusión de las dos *aporiai*.

Palabras clave: Aristóteles; nous; alma; psicología; pensamiento.

ABSTRACT

In this paper I provide a global reading of Aristotle's *De Anima* III 4 aimed at unveiling the rigorous argumentative structure of the chapter, which I show to exhibit the typical Aristotelian pattern of philosophical inquiry: a setting of the agenda of basic questions to be answered; a dialectical path to the position of a hypothesis; a derivation from it of relevant individualizing features of the object, some of which are already manifest and are accounted for as derivable from the hypothesis; and the emergence of *aporiai* that *prima facie* seem to invalidate the hypothesis but eventually allow for a deeper understanding of it. I attempt to reveal the speculative progression of the chapter by initially regarding the *Actuality Principle* as underlying his *Assimilation Model* of cognition (S cognizes F iff S's cognitive principle becomes F due to a cognized object O that is F in actuality). Aristotle derives *Unmixedness* from not having limits of scope (*Unlimitedness Assumption*), which is a manifest feature of *voûç*, from *Unmixedness* he derives *Separability* (these entailments are clarified through the first *aporia*), from *Separability Spontaneity* and from *Spontaneity Self-thinkability* of *voûç* (clarified through the second *aporia*). Although I examine the whole chapter, I focus specifically on the theoretical and methodological value of introducing and addressing the two *aporiai*.

Keywords: Aristotle; nous; soul; psychology; thinking.

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PUTTING *DE ANIMA* III 4 IN CONTEXT²

Before embarking on the analysis of *De Anima* III 4, let us remind ourselves of what comes before. The whole psychological inquiry of *De Anima* is informed by the principle of ontological and explanatory parsimony: all manifest animal behaviours are brought back to a small set of basic capacities or “souls”, i.e., of fundamental functions or “parts” of the unitary soul as the first actuality of a given individual living body. After the treatment of nutrition and perception in II 4-III 2, III 3 brings φαντασία back to the perceptual part/function, as it is defined as a movement brought about by perception³. Even if it turns out to be a *trait d’union* between perception and intellection,⁴ φαντασία is shown to belong to the perceptual soul. Nonetheless, some features of it already emerge as analogous to those peculiar to the intellect. It involves a *retention* of perceptual contents, it can be activated *spontaneously* at will,⁵ its contents can be *fused* and combined into new wholes,⁶ it is not *bound* to the present stimulus as perception *stricto sensu* is,⁷ and later it is described as a sort of νόησις for animals.⁸ Indeed, it is what accounts for intelligent animal behaviour, as it is what makes certain reasonless animals worthy of being described as φρόνιμα.

Once Aristotle has established in III 3 *what* φαντασία is and *why* it is there,⁹ he introduces νοῦς as “the part of the soul by which the soul knows and understands (φρονεῖ)” (429a10-11).¹⁰ The agenda of the chapter is then neatly set out through four fundamental questions:

² I would like to heartily thank the anonymous referees for the precious suggestions and the fruitful criticism.

³ *De An.* III 3, 429a1-2.

⁴ See for example *De An.* III 7, 431a14-16, 18-19; 431b2-3; III 4, 432a7-11, 13-14.

⁵ *De An.* III 3, 427b16-19. On spontaneity of intellect, see *infra*.

⁶ *De An.* III 7, 434a9-11. On combinability of noetic contents (νοήματα), see III 6, 430a27-b6.

⁷ For example, *De An.* III 3, 429a4-6.

⁸ *De An.* III 10, 433b10.

⁹ *De An.* III 3, 429a8-9: the ‘τί ἐστι’- and ‘διὰ τί ἐστιν’ questions are obviously interwoven, still they are formally different.

¹⁰ While Ross 1956, *ad. loc.* reads φρονεῖ as practical wisdom (φρόνησις), Frede 2008, 289-290, contends that it here means “having sense, showing sense or being sensible”, a cognitive ability some animals share. Here, however, φρονεῖ is associated with γινώσκειν, a term typically used in the *corpus* for rational knowers, and both are used as a sort of hendiadys to isolate the intellectual part of the soul that is a human privilege. Neither is practical wisdom at stake here in my view, as rational action will be studied much later (III 7, III 9-11). The verb rather denotes that sort of human “grasping” or “realizing” involved in being minded in general,

- a) is this part *separable*?
- a¹) if so, it is so only according to its definition, or also spatially?¹¹
- b) what is its “difference”, i.e., its individuating feature?¹²
- c) how does thinking¹³ come about?

The first two questions concern the ontological status of this part in relation to the other parts, to the soul as a unity and to the soul/body compound. The last two address a what-question and a why-question respectively, according to the same path of inquiry followed in III 3 with φαντασία.

An analogy with perception is then suggested, which applies to intellection a more general methodological criterion: to grasp any cognitive phenomenon, the inquiry should focus on the typical *object* first, then on the *activity* of cognizing such object, and finally on the *capacity* of which the activity is an occurrent expression;¹⁴ accordingly, the path perceivable→perceiving→perception should thus be paralleled by the path intelligible→intellection→intellect. If any cognition is a type of suffering from a certain kind of proper object, and a suffering that triggers the activation of a dedicated capacity, intellection as a type of cognition will also work like perception. The analogy is cautious and in a sense dialectical: *if thinking is like perceiving*, then it will consist of a suffering from the νοητὸν *or something else of this sort* (a13-15).¹⁵ Whatever its

as in the ordinary, non-technical meaning of the Greek verb. “Understands”, as in Hicks’ (1909) and Shields’ (2016) translation, appears to be a good compromise, if non-technically meant. Some lines below the same part, the “so-called νοῦς of the soul” is characterized as the part by which the soul discursively think and conceives – διανοεῖται καὶ ὑπολαμβάνει, a23 – but these are rational abilities that presuppose the basic capacity Aristotle is going to explore first. Reason is a cluster of capacities drawing on a fundamental capacity.

¹¹ Χωριστός can have a modal meaning and a non-modal one: I translate it as “separable” for reasons that will become clear later. If X is χωριστός spatially, it is also separated, but if it is such definitionally, then it is “separable” but not necessarily separated. I will argue that the latter is the right option. In any case, the question is neutral about which option is right, so “separable” is the best translation. On separation of parts of the soul, see Corcilius–Gregoric 2010, Fine 1984, and Morrison 1985, Whiting 2002, Menn 2002. I render κατὰ μέγεθος as “spatially” for the sake of clarity, as the alternative is the same as “λόγῳ μόνον ἢ καὶ τόπῳ” in 413b14-5.

¹² I do not agree with Shields’ suggestion that here *differentia* is used in a “relaxed” sense (Shields 2016, *ad. loc.*). On the contrary, it has a technical-taxonomical sense, as a feature that sorts a genus into species. The genus is: [discriminating/cognizing] in general –κριτική δύναμις, on which see III 3, 428a3-4, III 9, 432a15-16– its species are: [perceiving] and [thinking].

¹³ As stressed by Frede 2010, 291, Burnyeat 2008, and Fronterotta 2016, νοεῖν is a success-verb while “thinking” is not, as the former represents a *cognitive achievement*. Aristotle is first concerned with the reception of certain types of content, and only later will he come to discursive thinking: νοεῖν is not *all* νοῦς enables us to do, but it is still the basic (and most noble) activity, which explains and grounds others.

¹⁴ *De An.* II 4, 415a14-24.

¹⁵ *De An.* II 5 explains at length that cognition is an *alteratio perfectiva*, the exercise or expression of a capacity towards an object eventually causing the response of the capacity. So,

differentia may be, this cognitive principle must be *impassive, receptive* of the form and *potentially* but not actually like this form, just as the perceptual principle is towards perceivable properties (a15-17).¹⁶ At this point the analogy gets contrastive, simply to isolate the *differentia* –beyond the common [*cognizing/discriminating*] kind– the inquiry is in search of. It is legitimate to start from some manifest features of the inquired object to achieve this, which methodologically work as ἐνδοξα to do justice to: we assume as an uncontroversial fact that intellect can virtually know everything, as everything is thinkable.¹⁷ In other words, there are no intrinsic limits to intellectual knowledge, even though each individual thinker is such that there are an indefinite amount of things she/he does not know *de facto*. The domain-limitless status of the νοητόν tells us something about the specific features of the activity concerning it, and about the capacity of which the activity is an expression.

1. FEATURES OF THE INTELLECT

If you are to cognize F you need to receive the form F; from Aristotle's *Assimilation Model* of cognition if you are to receive the form F your cognitive principle needs to *become* F; to become F the cognitive principle must *not* be F in actuality, even if it must be F in potentiality.¹⁸ It cannot become what it already is, so it cannot cognize what it already is.¹⁹ Even if a sensory cognitive principle is not identical 'in being' with the organ that enables it as a power,²⁰ what I have just labelled as *Assimilation Model* can be straightforwardly grasped at the level of the sensory organs in the first place: the eye-jelly is transparent, so it can receive every colour, i.e., become the colours one sees. If the eye-jelly was red, we could not see instances of worldly red as our eye could not become what it already was, so that the [red] property would be a blind spot for our visual system just as transparency is a blind spot for us (we cannot literally see the transparent as such, we rather grasp transparency through seeing colours

it is a very peculiar sort of "suffering". "Something else of this sort" is referred to "suffering", not to "νοητόν".

¹⁶ In fact, the *Assimilation Model* also applies to nutrition and reproduction, not only to cognition. But it does in very different ways we are not interested in now.

¹⁷ Such a feature is both a common opinion and a philosophical ἐνδοξον shared by many philosophers, it is treated by Aristotle as something manifest one can reasonably assume and is supposed to account for. From Parmenides on, the (phenomenally invisible) object of νόος is τὸ ἕόν, *being* itself (fr. 2DK), rather than a limited portion of reality.

¹⁸ *De An.* II 5, 418b3-4.

¹⁹ That cognitive powers are actualized by external objects different from themselves, is what explains why we do not smell our own nose and do not see our own eyes (II 5, 427a2-10).

²⁰ The organ is a magnitude, while the sense is not: indeed, they are identical 'in number' but different 'in being' (*De An.* II 12, 424a27-29): such a distinction is fundamental for the hylomorphist framework, and this is why it is restated many times (e.g. 425b27, 426a16, 427a3, 431a14, 432b1): on the *Assimilation Model* in perception as involving the sense *qua* power besides the sense *qua* organ, see Lorenz 2007.

through transparent *media*).²¹ A cognitive episode exhibits the same ontological structure as an ordinary change: a subject/patient S that is potentially F becomes actually F if an object/agent O that is actually F causes S to become F.²² This can be termed the *Actuality Principle*, which underlies the Assimilation Model. The subject of change assimilates a property already possessed by another agent, by a kind of transfer. Cognitive episodes are not ordinary changes insofar as the occurring actualizations of a cognitive capacity *express* the potentiality the capacity consists of, rather than negating or cancelling it. My capacity to see red is expressed when I see something red, and my visual organ both becomes red and preserves its *logos*, a proportion that implements the capacity to see red *and* any other colours: this is the Impassivity Condition hinted at above (a15). Although an *alteratio perfectiva* is not a mere alteration, the Assimilation Model holds in both cases. Not only does our visual sense enable us to receive different colours but not the transparent, because the respective organ is transparent in actuality by its own nature, but our visual sense also enables us to receive *only* colours and not sounds or flavours or other types of sensible property. The transparent is able to become any colour, but it cannot ever become a sound (different from the ‘silence’ in the ear²³), and it can much less become other non-sensible types.²⁴ Perception thus has a blind spot within the type it is by nature sensitive to, and is blind to each other type for the same reason: it works through a physically implemented *logos/proportion/ratio* that is sensitive to a range of degrees within a given sensible type.

The limitless domain of intellection makes it radically different from our perceptual capacities. To think everything, νοῦς must be *unmixed* (ἀμίγής); its otherness with respect to its objects must be absolute, not just relative (as transparency is to colours, “silence” to sounds, a neutral temperature to hot and cold, and so on), for it to be able to become everything. Had it some actual nature F in it –that is, was it *mixed* with something F– it could not know/become F, as it would have a blind spot,²⁵ but it is assumed that it does not contain this.

²¹ II 7, 418b5-7, 27-31.

²² *De An.* II 5, 417a17-18. The model is explored in detail in *Ph.* III 1-3 throughout and in *De Gen. et. Corr.* I 6-8.

²³ The air in our ear is still to enable it to receive all “differences” of movement (sound is movement of the air, II 8, 420a9-11).

²⁴ Even if we consider the perceptual part as a whole, included the so-called commonsense and other superior functions of sensibility, even if we also include φαντασία, the scope of sensibility is still limited to a given set of types: that of the sensible/perceivable types (proper sensibles *plus* common sensibles). This is why the identification of our νοῦς with commonsense as originally suggested by Alexander –and argued for, for example, by Sillitti 2016– is to be rejected: the scope of νοῦς is unlimited, that of commonsense is not.

²⁵ παρεμφαινόμενον γὰρ κωλύει τὸ ἀλλότριον καὶ ἀντιφράττει (429a20). Like Alexander, *de An.* 84.15-17, Themistius, *in de an.* 94.23-24, Simplicius, *in de An.* 226.6-9, Hicks 1909 and others, I take ἀλλότριον as the object of κωλύει and ἀντιφράττει: if something was present in the νοῦς’ nature, it would hinder and obstruct (the reception of) what it is alien to it; others (Ross 1961, Hamlyn 1968, Burnyeat 2008, 33) take τὸ ἀλλότριον as the subject and

Below (a24-26), Aristotle adds that νοῦς cannot be mixed *with the body* in addition to being unmixed with any of its objects: first, a bodily nature would involve the possession of certain positive forms, which has already been ruled out; second, Aristotle *assumes* –surprisingly enough– that intellect has no bodily organ. If it had a bodily nature, it would have a bodily organ, but *as* it has none, it has no bodily features so it is unmixed with the body. This appears to be a strange line of reasoning,²⁶ but in any case the unmixedness in the first sense accounts for it in the second sense, including the absence of a physical organ of intellection (which has already been assumed as preliminary evidence).

Starting from the Unmixedness Condition, in contrast to the mixedness condition of perception, Aristotle characterizes the intellect negatively as having *potentiality* or *capacity* as its only nature (a22-23).²⁷ A capacity/potentiality for a form G is typically grounded in an actual form F, which entails the capacity to become G. For example, being clay is a positive form a piece of clay has in actuality just insofar as it *is* clay; this form grounds the potentiality of clay to become a statue or a brick. However, νοῦς’ potentiality is so pure and radical that it cannot be grounded in any actual, positive form. This cognitive principle surprisingly resembles prime matter, if not nothingness (the capability to become *everything* cannot be *anything*).

Plato’s innatism is the main polemical target here: as Aristotle says *apertis verbis*, those who hold that the soul is the place of forms are right, except that this only holds for the noetic soul and that the soul is *only potentially* the place of forms (a27-29): no form at all is already in our soul as a part of its original nature, so innatism is false. But Aristotle must now articulate his alternative model.

Once an individuating feature or *differentia* –absolute plasticity involving a “negative” nature– has been dialectically obtained (question *b* above) through the contrastive analogy with perception, even the common features with perception turn out to be specific and different in the case of νοῦς: the impassivity

παρεμφαινόμενον as its apposition: if something alien “appeared” into the νοῦς, it would hinder and obstruct *it*. The philosophical point would be the same, anyway. See Hicks 1909, 478-479 and Magee 2003, 58-63 for critical surveys of the debate.

²⁶ Aristotle may be only assuming that intellect has not a dedicated ὄργανον, as the eye is for sight or the nose is for smell. From this fact *and* from the Purity/Unlimitedness of its Capacity it is reasonable (εὐλογον) to take it as not being mixed with bodily elements. This does not mean at all that our bodily capacities are not necessary for its existence.

²⁷ We may translate δυνατός as “possible” or as “in potentiality” or as “capable” (as Politis 2003 prefers to do). On this point, see also Polansky 2007, 439. Being νοῦς a cognitive capacity, “possible” would be just too remote and abstract; but as Aristotle must also be talking of a condition in which there is as yet *no* reception of intelligibles, in the first place νοῦς is a sort of (more remote) potentiality *of itself* as a positive capacity. Furthermore, as δυνατός is a relational feature, it is implicit that νοῦς’ nature is that of being δυνατός *of every νοητόν*, not just of everything. Otherwise, it would be identical with prime matter, which is obviously not the case.

of intellect is much more radical than that of perception (429a29-31). In perceiving, such as in seeing, the *ratio* that works as a standard for measuring variations brought about by external stimuli can be impaired by too intense stimuli, so the impassivity of vision is limited to a certain threshold of physical resistance of the internal structure of the organ, beyond which the sense itself would be impaired. On the contrary, intellect is like a muscle without a threshold of rupture, a capacity whose resistance, i.e. impassivity, is absolute: in grasping increasingly more “intense” intelligibles it becomes increasingly powerful towards less intense intelligibles rather than being impaired.²⁸ This is a manifest feature, which is accounted for by *separability* (b5-6): here χωριστός is opposed to the perceptual part’s “not being without body”, so it must mean separable *from the body*. This is an answer to question *a* above, but up to now nothing has been said about whether such a separability is just definitional or also spatial (question *a*¹ above). Here, the predicates ἀμύγης and χωριστός are not superimposable, as even if both the first and the second entail a kind of independence from the body the first concerns the intellect’s intrinsic *nature*, broadly expressed by the *differentia* according to question *b*, while the second concerns its (definitional or physical) *relations* with the body (and with the other bodily implemented parts of the soul) according to question *a*. Thus, there is no redundancy.

A passage follows that apparently looks digressive or out of place:

“Once it (νοῦς) has become each thing in the manner in which one who knows in actuality is said to do so (this happens whenever one is able to actualize (his knowledge) through oneself), even then it is somehow in potentiality, but not as before learning or discovering. And then it is able *to think itself*”²⁹ (429b5-9).

One may raise the objection that one’s intellect is not just a pure potentiality, insofar as it retains pieces of knowledge that now characterize it as its positive features (like stored contents which are now ‘mixed’ with it), but this objection disregards that the intellect continues to be those known intelligibles also in potentiality, even though in a different sense from that of ignoring them (not

²⁸ More intelligible *per se* (though less intelligible *quoad nos*) are those principles and universals that are more far from experience, so more abstract and general: they are “more intense” as they are by nature σφεστερα και γνωριμωτερα (*Ph.* I 1, 184a17-18).

²⁹ Ross 1961, followed by Hicks 1909 and Shields 2016 among many others, accepts an emendation by Bywater 1885 who changes δὲ αὐτὸν into δι’ αὐτοῦ (see Sophonias: ἄφ’ ἑαυτοῦ). But there is no need to accept the emendation, and the text would even become redundant, as Spontaneity has been just introduced at 429b7. In fact, the entailment from Spontaneity to Self-thinkability is only hinted at here, and it will make more sense later after going through the *aporiai* (see *infra*): such anticipations are not awkward in Aristotle’s texts.

having already discovered or learnt them). In addition, once one's intellect has become able to actualize its previously learnt/discovered intelligible contents at will, then it can think *itself*. This cryptic remark anticipates one of the puzzles we will deal with later. Thus, 1) $\nu\omicron\upsilon\zeta$ can be potentiality both of the already learnt content and of the actually ignored content, though in different senses, so its possessed knowledge at a certain time does not undermine either the unlimitedness of its cognitive scope or the "purity" and absoluteness of its potentiality. 2) $\nu\omicron\upsilon\zeta$ is able to think itself only as soon as it can spontaneously actualize any previously acquired contents. Here it is not clear why there is a connection between Spontaneity and Self-thinkability, but it is confirmed that not even $\nu\omicron\upsilon\zeta$ itself is excluded from the cognitive scope of $\nu\omicron\upsilon\zeta$, otherwise it would not be the case that it can think *everything*, as for the original Unlimitedness Assumption.

A problematic passage (429b10-22) follows concerning a parallelism between degrees of separation of the intellect and the respective degrees of separation of its objects, i.e., of universals intelligibles, from the sensible particulars in which they are instantiated. Provided that a cognitive capacity is distinguished by its occurrent activities, and these activities can be distinguished on the basis of their proper object, it is quite reasonable to examine the ontological status of $\nu\omicron\eta\tau\acute{\alpha}$, i.e., of the universals or intelligibles, to grasp the possible relations between the cognitive principle and its proper object. First, a magnitude is distinguished from "being a magnitude", then meat is distinguished from the essence of meat—from "what it is for meat to be"—and then water from the essence of water. What discriminates a magnitude, water and meat, says Aristotle, is either something different (from that which discriminates the respective essences) or something differently disposed (b13, b 21-22).³⁰ The most natural way to read this is to regard the essences to be distinguished either by $\nu\omicron\upsilon\zeta$ or by the perceptual part as *differently disposed*, whereas a magnitude, or an instance of water or meat are discriminated solely by perceptual means. I recognize a physical object such as an amount of water or a part of meat in virtue of certain perceptual discriminations, first involving proper senses, then common sensibles and perhaps also $\phi\alpha\nu\tau\alpha\sigma\acute{\iota}\alpha$, but I could not grasp the essence of these items unless I exercise my noetic capacities. Knowing *what makes water what it is*, for example, involves possessing a universal content that transcends my perceptual access to the world: something may look exactly like water without being so. Perception with $\phi\alpha\nu\tau\alpha\sigma\acute{\iota}\alpha$ can generalize over and above certain sensible profiles and trigger a pre-theoretical, empirical recognition;³¹ a layman or a cat can discriminate water, without knowing anything at all about what makes water what it is. The latter information is not perceptual, it is rather

³⁰ This passage is discussed in detail by Kahn 1981 and Kahn 1992.

³¹ For $\phi\alpha\nu\tau\alpha\sigma\acute{\iota}\alpha$ as being responsible for "seeing-as", see Frede 1995, Feola 2015.

a scientific matter and involves the deployment of theoretical notions that are universal throughout: this is why the layman as a human being *could* come to know this information, but the cat could never come to know it. Perceptual access as “differently disposed” is just perception as a recognitional principle *informed by* $\nu\omicron\upsilon\zeta$ or, more accurately, so disposed as capable to be informed by $\nu\omicron\upsilon\zeta$.³² Aristotle, however, probably prefers the other horn of this dilemma: something else, the intellect, discriminates the essence of water, even if it has been previously enabled by empirical recognition (see *infra*). The last example is the straight line, a geometrical entity: perception can well recognize a straight line (starting from its ‘matter’, like the physical trace on a writing tablet, or on the sand) but it cannot discriminate what it is to be a straight line as this is a geometrical notion. To grasp what a straight line is we need to possess a universal definition and a specific geometrical theory, which is certainly not a capacity that only draws on perceptual skills. Aristotle says that the essence of the straight line “could be the dyad” (b21). He probably refers to a platonic doctrine, but we can substitute a contemporary definition of a straight line. Geometrical entities have a matter in a different sense from the matter of physical entities: the more abstracted the essence of X from matter, the more “separated” the $\nu\omicron\upsilon\zeta$ from perception and sensibility, and thus from body as well (perceptual information is both bodily transmitted and *about* bodies). What makes a straight line straight has nothing to do with the individual physical trace or the sand or a sign on the wax tablet, it is rather a set of properties any physical trace whatsoever must instantiate if it is to be a straight line. What makes meat what it is, is on the contrary not just an abstract form that could be physically implemented anywhere, it is rather a certain function or *logos* that must involve a certain *type* of matter. This type of matter has sensible qualities, so grasping the essence of meat involves sensibility in a more significant way than grasping a geometrical essence, which is more “pure” as it is by definition more “matter independent”.³³ This controversial passage has numerous issues on which I will not dwell, but it should be stressed that its presence in III 4 is quite reasonable. The intellect cooperates with sensibility in different ways and to different degrees, but even when such cooperation is necessary and, so to

³² Here I follow Themistius and Simplicius rather than Kahn 1981, 1992 and Lowe 1983, 22-23 who think that the principle that discriminates a magnitude, meat or water is $\nu\omicron\upsilon\zeta$ differently disposed from $\nu\omicron\upsilon\zeta$ as discriminating a magnitude’s, meat’s and water’s *being*. There is no need for $\nu\omicron\upsilon\zeta$ to discriminate a magnitude, an amount of water or a part of meat: perception + $\phi\alpha\nu\tau\alpha\sigma\iota\alpha$ suffice. I cannot argue for this point here, but in my view (contrary to Kahn) accidental perception is genuine perception (involving $\phi\alpha\nu\tau\alpha\sigma\iota\alpha$ but without need of $\nu\omicron\upsilon\zeta$) and accounts for recognitional abilities in experience. Along the same lines (about accidental perception and empirical recognition), see Feola 2015.

³³ See *De An.* I 1, 403b15-17: those affections of bodies which are *not* in fact separated but are abstracted away from their bodies and considered independently of them, are studied by mathematicians. See also *De An.* III 8, 431b15-17: mathematical entities are not separated but $\nu\omicron\upsilon\zeta$ thinks them in separation, as if it was taking away concavity from snubness.

speak, particularly intimate, we should not confuse it with sensibility.³⁴ After all, this confusion was the cardinal sin of the “old thinkers”: they got things wrong with intellection first because they took it to be a corporeal alteration like perception, in addition to getting things wrong with perception itself by taking it to be *just* a corporeal alteration.³⁵

Sensibility is not sufficient for grasping universal contents, be them essentially connected with a certain type of matter (as physical hylomorphic compounds) or not (as geometrical items). We now know that a special object of νοῦς is the *essences* of particulars.³⁶ We can perceive X or Y but we must have a noetic grasp of X’s or Y’s *being*. We also know that noetic activity can exhibit different degrees of “separation”, even if up to now it has been far from clear what kind of separation is involved (definitional, existential or other). However, at this point we can already infer that the sense in which νοῦς is separable is not the “spatial” one, insofar as it has no organ, so it is not somewhere else in the body, and as for the alternative of the question a², separation must then be definitional.³⁷ More on this later in the paper.

The *divisio textus* adopted so far shows that III 4 exhibits a unitary programme through a relatively neat argumentative progression: basic questions (a10-14), analogy with perception (a14-18), characterization of νοῦς (a18-29), disanalogy with perception concerning the kind of impassivity and the separation from the body (a30-b5), νοῦς’ “spontaneity” and self-thinkability (b5-9) and essences as typical objects and thus kinds of separation of νοῦς with respect to types of νοητά (b10-22). In particular, separation is first connected to spontaneity (...ὁ δὲ χωριστός, ὅταν δ' οὕτως ἕκαστα γένηται ...429b5-6), then spontaneity to self-thinkability (a9), then separation of νοῦς is explored in terms of ways in which the objects (the essences) can be separated from their respective instantiations (a10-22). Now, what conceptual connection does conduce from *separation* to *spontaneity* and from *spontaneity* to *self-thinkability*? What have these three features to do with νοῦς’ having *essences* and virtually the essences of

³⁴ The same *caveat* is in III 8, 432a13-14: the first νοήματα, it is urged, are not without images but are not just images.

³⁵ See *De An.* III 3, 427a17-427b9. See also *Met.* Γ 5, 1009a38-1009b38; *De An* I 5, 404a27ff.

³⁶ Essences are the most noble objects of νοῦς (discursive thinking is possible even before scientifically grasping essences and principles). But: a) a capacity/activity is better individuated by its most excellent exercises b) Aristotle’s is first interested in intellect as a *cognitive* capacity, rather than in conceptualization more generally meant.

³⁷ That νοῦς is not existentially separated is evident from what Aristotle says *apertis verbis*: in 403a8-10 he says that *if* νοῦς is not without φαντασία it cannot be without body, in 432a7-9 he says that νοῦς is *not* without φαντασία (no νοεῖν without φαντάσματα: 417a31; *De Mem.* I, 449b32), so we can neatly rule out existential separation just through *modus ponens*. It is true that at 413a6-7 Aristotle also says that nothing prevents some parts of the soul from not being actuality of a respective body: but he is probably meaning that a part as νοῦς has no dedicated *organ*, which does not entail that its activity is not act of the animal body *as a whole*.

everything as its objects? The Puzzles and their “resolutions”³⁸ are a dialectical way of addressing such questions. Indeed, they put into question the very possibility of a relation between νοῦς and νοητά (involving Unlimitedness, then Separation and Spontaneity), and the very possibility that νοῦς thinks itself (involving Spontaneity and Separation as conditions for Self-thinkability).

It is worth remarking that the inquiry into whether νοῦς can think itself or not has a clearly self-referential dimension. Aristotle’s inquiry about νοῦς is an intellectual enterprise, including the treatment of the very issue of Self-thinkability; if νοῦς could not think itself, not even a theory of νοῦς like that of III 4 would be legitimate: in other words, if it turned out to be the case that νοῦς *cannot* think itself, this would involve a self-defeating theory about νοῦς!

Here is a basic scheme of the speculative progression of III 4:

Assuming the *Assimilation Model* and *Unlimitedness*:

- 1) Unlimitedness → Unmixedness.
- 2) Unmixedness → Separation.
- 3) Separation → Spontaneity.
- 4) Spontaneity → Self-thinkability

With all this in mind, we can finally examine our Puzzles, whose treatment will shed new light on (1) → (4).

2. THE PUZZLES OF INTELLECT

2a) Puzzle I (429b22-26)

If νοῦς is *simple*, (specifically) *impassive*, and it has nothing in common with anything (i.e., it is *unmixed*), as Anaxagoras says, how can it think, assuming that thinking is a sort of *suffering*?

In terms of the Assimilation Model, for a subject to cognize an F means that his/her cognitive principle receives/becomes F, as it suffers from something that: i) is F in actuality; ii) falls within a kind that is common to the subject’s kind (the eye is naturally colourable, the ear is apt to receive sounds, the meat can receive hot and cold insofar as it has *a* temperature, and so on). However, such a common kind would entail a level of *passivity* and *mixedness* (due to the positive nature that would ground the aptness to receive certain positive forms).

³⁸ On λύσις as a different dialectical tool from ἔλεγχος in diaporematic treatment, see Rossi 2017.

This is an *aporia* because two incompatible theses appear *prima facie* to be both true. A way out from the Puzzle is supposed to consist in a new distinction, or in unveiling a false hidden assumption, due to which the reasoning that leads to the contradictory conclusions looks inescapable.

Aristotle's Assimilation Model goes beyond the two unilateral extremes of the Empedoclean Model (the like knows the like) and of the Anaxagorean Model (the unlike knows the unlike).³⁹ The *terminus a quo* is a condition in which the subject is unlike the object in one sense (for example, differently coloured, colder, and so on) but it is like the object in another sense (both subject and object must be by nature "colourable", "heatable" and so on);⁴⁰ the *terminus ad quem* is such that subject and object are like one another under *both* the respects above. The Assimilation Model, however, is problematic in the case of intellect as Aristotle himself has characterized it, so the Puzzle does not just depend on some Anaxagoras' assumptions which Aristotle rejects, it is an "internal" trouble.⁴¹ It is true that so far Aristotelian $\nu\omicron\upsilon\varsigma$ has not been explicitly proved to be *simple*, but even without assuming Simplicity the Puzzle remains. In any case, at least a qualified form of simplicity could easily be derived from Unmixedness.⁴² In addition, Impassivity is troubling in itself, because *if* thinking is a sort of suffering, nothing that is *radically* impassive is able to suffer anything, therefore to think anything.

³⁹ Especially in *De Gen. et Corr.* I 6-7, Aristotle strikes a middle-path between 'like-by-like' and 'unlike-by-unlike' models of doing and suffering. As we will see, the methodological pattern of endorsing qualified versions of seemingly incompatible statements is also to be found in the diaporematic treatment of the puzzles concerning $\nu\omicron\upsilon\varsigma$ (see *infra*).

⁴⁰ Change only happens between contraries or their intermediates, which all fall within a same kind (see *Ph.* I 5, 188a35-b3), by an agent *qua* falling in that very kind.

⁴¹ I generally agree –apart from details– with the reading of the Puzzles provided by Lewis 2003 (to my knowledge, the best reconstruction available). Some scholars (Hamlyn 1968, Discroll 1992, Wedin 1988, 1989b) think that the Anaxagoras' requirements (Unmixedness and Simplicity) are *irrelevant* for Aristotle's solution of the puzzles, even if some of them (like Discroll) maintain that Aristotle *endorses* these requirements. Others, like Ross 1961, 294, hold that Aristotle *rejects* them ($\nu\omicron\upsilon\varsigma$ is not simple and does come to be mixed with $\nu\omicron\eta\tau\acute{\alpha}$ as soon as it thinks). I suggest there is neither irrelevancy nor endorsement nor rejection, rather an endorsement of a qualified version of them, which makes the apparent *aporai* cease to be such. Its Simplicity and Unmixedness in nature (required by being a pure and absolute potentiality) are maintained, together with its capability to become contingently mixed (and "complex") but without any impact on its own nature. Aristotle often recovers doctrines by the old thinkers in a qualified way, by grasping the good theoretical reasons beyond the actually mistaken way they are addressed. For example, in III 6, 430a27-33 he uses Empedocles' "proto-evolutionist" idea of heads put together with bodies by Love to illustrate propositional contents as truth-evaluable noematic syntheses made by $\nu\omicron\upsilon\varsigma$. Cosmological issues are "translated" into cognitive issues, just as the "domination of all Universe" by a theological $\text{No}\ddot{\upsilon}\varsigma$ is "translated" into universal cognition or thinkability by our human intellects. On Anaxagoras' original doctrine concerning cosmic and cognitive powers of $\text{No}\ddot{\upsilon}\varsigma$, see Marmodoro 2017, Chapter 5.

⁴² Aristotle's critical doxography in *De An.* I focuses on Anaxagoras in 404a26-b7, 405a14-18 and 405b20-24, where he says that Anaxagoras has not explained how $\nu\omicron\upsilon\varsigma$, having nothing in common with anything and being impassive, can ever know. This does not mean that

2b) Puzzle II (429b26-29)

How can νοῦς think itself? If B¹) it is νοητός in virtue of itself (*per se*), and what makes νοητά all νοητά is a *common form* to all νοητά (i.e., both to νοῦς and to the other νοητά), then the other νοητά would be such in virtue of having νοῦς! If B²) it is νοητός in virtue of something other than itself and common to the other νοητά (*per aliud*), then it has something mixed in it and common to the first-order νοητά.

That which grounds the thinkability of intellect itself and of the other intelligibles must be the same: if it is the intellect itself, then if X is thinkable X has intellect, but this leads to a sort of absurd panpsychism.⁴³ If it is something else, then νοῦς cannot be unmixed, as in the original Unmixedness Condition.

Puzzle II is a particular deepening of Puzzle I that addresses Self-thinkability and combines it with the assumption that there must be a common ground of thinkability for everything that is thinkable (be it νοῦς itself or the other νοητά). The Unmixedness Condition is already problematized in Puzzle I, but even if Puzzle I was solved, Puzzle II challenges this condition *a fortiori*, so it would still require further specific treatment: how can something unmixed have a property in common with radically different items from itself, a property that would be other than its “simple” nature (on pain of panpsychism)?

Just as the two Puzzles are strongly connected, so are their “resolutions”, which we must now turn our attention to.

There is another issue that remains implicit in the theoretical framework from which the *aporai* emerge, but is of the greatest importance nonetheless: how could νοῦς ever become *itself*? If it must be radically different from everything to be able to know/become everything, therefore to know itself it should be radically *other than itself*, which is a plain absurdity (unless qualified in some way). Self-thinkability seems to be ruled out from the very features νοῦς is credited with in the first place (ultimately depending on the Assimilation Model), but without Self-thinkability the Unlimitedness Assumption has to be dropped, as there would be something that νοῦς cannot think, namely, νοῦς itself.

2c) “Resolution” of Puzzle I (From *Unlimitedness* to *Unmixedness*. From *Unmixedness* to *Separability*)

Aristotle first (b29-31) reminds us of his previous distinction between different sorts of “suffering”, introduced in II 5 (417b2-17) and restated some lines above

Aristotle rejects these conditions, rather that he will have to explain how is it that νοῦς can be that way *and* know at the same time. This is what he does by going through the *aporai*.

⁴³ For a tentative antecedent of this horn of the Puzzle, see Plato’s *Parmenides* 132c10-22.

in III 4 (429bb6-9). *Noûs* can keep being X in potentiality even after having acquired X, and it can then become again X in actuality whenever the subject wants to. This is what I have labelled as “Spontaneity”, the ability to re-actualize a content previously acquired, which is an expression rather than a correlative alteration or a passage to a contrary state. The impassivity of intellect can be radical and compatible with radical receptivity, insofar as *voûs* remains itself (a pure potentiality for every form). Although it receives this or that positive form, it remains a capacity of those very same forms it presently has in actuality, but no positive form originally belongs to its nature. Thus:

“[...] *voûs* is in some way potentially the *νοητά*, but none of them in actuality until it thinks. It is in potentiality just as in a writing tablet on which there is actually nothing written. This is exactly what happens with *voûs*.” (429b30-430a2)

The way (*πρός*: 429b30) in which *voûs* is potentially the *νοητά* is meant to be clarified by the well-known image of the writing tablet: if Aristotle explicitly states that what happens in this case is exactly what happens in the case of *voûs*, the analogy must be taken carefully rather than just as a vague comparison.⁴⁴ How could such an image enable us to cope with Puzzle I? First, in what “way” are unwritten contents potentially present (but actually absent) on a writing tablet? Given that *voûs* is originally characterized through a contrastive analogy with perception, is it quite natural to contrastively compare the image of the seal of a signet ring on a piece of wax (used in discussing perception in II 12⁴⁵) with the image of an unwritten writing tablet used about *voûs*. Perceptual sense is receptive of sensible forms without matter, just as an iron signet ring leaves a seal on the wax “without the matter” (without the iron the ring is made of); perceptual reception of sensible forms is a throughout bodily affair that is analogous to a physical impression of a seal on wax. The sense is to sensible forms just as the piece of wax is to the seal, and the seal is to the signet ring just as the received sensible form is to the sensible object. Now, written contents are much more abstract than physical impressions: a writing tablet need not be *like* the (infinitely many) words and propositions you may write on it; it has to be able to become physically “like” the shapes of the letters you may

⁴⁴ As Alexander acutely remarks (*De An.* 84, 21) *voûs* is not compared with the writing tablet (which is a physical item), it is just the way unwritten contents “are” in the writing table that is compared with the way intelligibles “are” in the *voûs* before it thinks at all: both contents are in potentiality “writeable” on empty spaces.

⁴⁵ See II 12, 424a17-24. The huge debate about how to read this passage is not what I am interested in here, so I will not address it. On the many Aristotelian uses of wax as a cognitive image, see Mingucci 2013.

write on it but the propositional contents written through impressing the letters' shapes onto the tablet need not be *like* these shapes at all. Writing such abstract contents on a tablet does *involve* a physical alteration of the tablet's surface, but the information on the tablet does not consist of such alterations. The physical receptor –a writing tablet– is “writable on” thanks to certain positive features it has, but what matters for our analogy is that: 1) the physical features of the tablet impose no limits on the content (such as the wax); and 2) when the wax surface has nothing written on it, it is *any* content whatsoever in potentiality, but it is not all contents *because* it already has *some* of these contents actually written on it. As $\nu\omicron\upsilon\zeta$ has been characterized as a *Pure Potentiality* of infinitely many contents, so is the writing tablet, according to the *Unlimitedness Assumption* and to the *Unmixedness Condition* (wax exhibits absolute plasticity and has no features in common with the propositional contents “mixed” in it). Furthermore, a writing tablet ($\gamma\rho\alpha\mu\mu\alpha\tau\epsilon\iota\omicron\nu$) was a piece of wood or clay on which wax was thickly spread, such that the written contents could be erased and rewritten again and again through smoothing out the wax indefinitely. The tablet retains potentiality, even of that which is *actually* written on it, insofar as this very same content can be cancelled and rewritten, and of any other possible content.

If the way that abstract contents are writable on the wax is the same as the way intelligibles are receivable by $\nu\omicron\upsilon\zeta$, what does *the tablet* corresponds to? The $\gamma\rho\alpha\mu\mu\alpha\tau\epsilon\iota\omicron\nu$ was a finite rectangle, and its physical features constrained the amount of contents that one could write on it at a certain time. Likewise, the bodily implementation of the *perceptual soul* (perception plus $\phi\alpha\nu\tau\alpha\sigma\acute{\iota}\alpha$ and memory) provides the subject with empirical contents that are the *matter* for his/her thinkable, universal contents. Our empirical information (presently perceived, retained by memory and “proto-generalized” by $\phi\alpha\nu\tau\alpha\sigma\acute{\iota}\alpha$) is finite and limited: by being the matter of our thoughts it constrains the extension of our thinking, the range of $\nu\omicron\eta\tau\acute{\alpha}$ a given individual can grasp and think.⁴⁶ These limits are never *intrinsic* to the intellect, they depend on the contingent amount of empirical information a certain perceptual soul possesses, and thus on the matter available for noetic ‘extraction’ of contents from such empirical material. As the wax *as such* is infinitely writeable but a given tablet has a specific limited writeable space (synchronically), so $\nu\omicron\upsilon\zeta$ *as such* is infinitely receptive, but a given intellect has a specific amount of finite empirical information that *de facto* constrains its intrinsically limitless noetic capacity. No information is originally “written” in our $\nu\omicron\upsilon\zeta$ –*pace* Plato– it is contentless in

⁴⁶ The experience is not the only constraint, of course. There are good intellects and bad intellects: certain people could never become scientists, independently on the richness of their experiential exposition to the world. The general idea that noetic abilities are constrained by perceptual encounters and different degrees of ‘retention’ of perceptual information for each individual, is to be found in Plato’s *Theaetetus* (especially 191d, 194c-195a).

itself and is a capacity to universalize and grasp noetic contents contained in empirical information, just as intelligible forms are potentially contained in sensible particulars. Thus νοῦς emerges as a *positive* capacity in us only when experience comes to be organized and conceptualized; from a guiding principle of unification already operative in human perceptual experience (broadly meant as to involve memory and φαντασία).⁴⁷ Intellection is “separable” from this highly organized experiential cognition, because empirical representations are different for each individual, while noetic cognition grasps universal contents that are by nature *independent* of their individual representations through which each subject accesses them. If me and you are to think of the νοητὸν [triangle], each of us would recall the φάντασμα of a specific triangle, but the difference of our representations are accidental to our noetic content, so that different “phantastic” representations can be the matter illustrating our intellection of an identical content. This is why we cannot remember or recall universals *qua* universals and memory only *accidentally* concerns universals.⁴⁸ If I have dispositional knowledge of a theorem, when I try to “remember” the theorem I in fact only remember some pertinent perceptual contents accidentally related to the theorem as a universal truth⁴⁹ (like particular lines, points, angles and so on): the theorem *qua* intelligible content can only be *contemplated* again, or re-actualized, just as if the content previously written on a writing tablet was rewritten anew on a newly smoothed surface, which “is” that content in potentiality. Universals, essences and principles are not remembered but grasped *immer wieder*.

The “separability” from the body is *definitional*, but as we know, “definitional” in Aristotle does not just mean “conceptual” in a deflationary sense, it has ontological import as the definition of X expresses what X is, i.e., X’s being.

⁴⁷ Perceptual contents are already “proto-generalized” through φαντασία and memory. This is what enables those recognitional dispositions that characterize accidental perception (I see something *as* the son of Diaries, as a man or as a dog, I see an already encountered sensible profile *as* an F): then, the soul is ready to receive universals. In describing the transition from experience to a noetic grasp of universals, in *An. Post.* 100a16-18 Aristotle says that even if we do perceive particulars, perception is “of the universal [...], of *human being* rather than of the human being Callias”. As *Ph.* VII 4 also explains, “when (cognition) of a particular takes place, in some way the universals are known *through* the particular” (247b6-8).

⁴⁸ See *De Mem.* 1, 450a2-14, 23-26.

⁴⁹ I take a theorem as an example, but III 4 first concerns simple universals, the objective counterparts (or the *denotata*) of terms whose combinations build propositions like hypotheses and definitions in sciences. Reception of universals is the preliminary condition for having propositional combinations of them (these are the object of III 6), just as in *An Post.* II 19 the first principles on focus are terms first, but insofar as propositions are made out of them. Likewise, the “simple” perception of proper sensibles is the first object, and only then does Aristotle enquire into “complex” perception, i.e., more synthetic capacities that depend on the first object, such as the perception of common sensibles, “intramodal” and “intermodal” perception of the difference between sensibles and the perception that we perceive, φαντασία. (Then, other capacities of the perceptual soul that draw on φαντασία are focused on in *Parva Naturalia*, such as memory and dreaming).

If $\nu\omicron\varsigma$ has been defined as an infinite capacity for universal contents, its definition (that tracks its objective essence) does not refer to perception and bodily processes, but this does not contradict Aristotle's hylomorphism, nor does it contradict the idea that noetic abilities are enabled by the bodily implemented perceptual soul and that our body as a whole is hypothetically necessary for our intellectual soul to be there at all.⁵⁰ Perceptual information is necessary insofar as it is *preparatory* with respect to intellection, but still it is not *constitutive* of intellection. Grasping a universal content (an essence) is a cognitive act prepared by certain perceptual activities, but its 'being', and consequently its definition, does not include any reference to such a preparatory activity. On the contrary, perception's very definition involves reference to bodily alterations and dedicated organs: but although our intellectual capacity has no dedicated organ, it does not mean that it does not rise from lower forms of intrinsically embodied cognition. Our intellectual activity is embodied because we would not think without a body, but our having an individual body is not constitutive of what we essentially do when we "think".⁵¹ If you and I both contemplate/actualize a universal content, my intelligible [triangle] and your intelligible [triangle] are the same universal form, even though our bodies are different, our representations are different, and our $\varphi\alpha\nu\tau\acute{\alpha}\sigma\mu\alpha\tau\alpha$ of a triangle are qualitatively and numerically different.⁵² Therefore, to come back to Aristotle's original question *a*², $\nu\omicron\varsigma$ is separable from the body not spatially or existentially but *definitionally*.

The writing tablet analogy in *De An.* III 4 parallels the well-known army analogy in *An. Post.* II 19.⁵³ Here, Aristotle first asks for how the immediate

⁵⁰ For "emergentist" accounts of Aristotle's $\nu\omicron\varsigma$ (in III 4), see Caston 2000, Wedin 1988: ch. 5, for whom the lack of an organ does not rule out an indirect dependence on inferior faculties (with respective organs). Other scholars such as Kahn 1992 and Sisko 2001 hold that $\nu\omicron\varsigma$ is immaterial and cannot fit with the hylomorphic definition of soul. Without entering into the huge debate on the "soul/body problem" in Aristotle, I only point out that defining the soul as the first actuality of a living body does not commit Aristotle to holding that *each* psychic capacity must have its own dedicated organ. Though the operational autonomy of thought from its bodily bases is problematic within a naturalistic framework, this is not exactly unique to Aristotle's model of mind.

⁵¹ This holds for theoretical intellect, as practical intellect concerns human action so it is more constitutively related to the body.

⁵² Such a dichotomy may remind us of Frege's distinction between *mental images*, which are subjective so that each has his/her own, and *senses*, which are objective and communicable. Even though senses are accessed through mental images, they are at a different level: they can be shared, while mental images cannot. See Frege 1892.

⁵³ See *An. Post.* II 19, 99b17-105b14. As they are $\acute{\alpha}\mu\epsilon\sigma\alpha\iota$, these principles should be simple terms whose combination builds propositions like definitions and hypothesis: the latter are "principles" as that from which scientific deduction starts but are not $\acute{\alpha}\mu\epsilon\sigma\alpha\iota$ as they are found through an inquiry, though not a deductive one. Aristotle is not clear about whether he is talking about terms or propositions (see Barnes 2002 and Detel 1988, *ad loc.* and Kal 1988: 35ff., for this debate). In any case, principles intended as terms need be grasped to grasp principles intended as propositions, the same way as in *De Anima* "simple" universals need be grasped to combine them in noematic, propositional syntheses (studied later in III 6).

principles of science become known: as essences and principles are the highest object of νοῦς, such a question parallels our question (c) about how νοεῖν comes about. The innate disposition from which possession of principles originally derives is said to be *perception*; in certain animals, perception brings about a retention of sensory information (what *De Anima* and *Parva Naturalia* will call φαντασία), which enables *memory* of what has been perceived. Many memories about a certain (type of) item make a unified “experience” (ἐμπειρία, 100a5, 100a7-8) of this (type of) item, from which the principles of art and science arise. The progression is then: sensation → its permanence (future φαντασία) → memories → experience → possession of principles.⁵⁴ The grasping of principles is enabled by a thoroughly *perceptual* series of cognitive steps, some of which are so highly sophisticated as to involve syntheses of many memories into an experience that already contains a proto-generalization over basic information about diachronically perceived particulars. The transition from experience (broadly meant) to the noetic grasp of principles (to νοεῖν) remains notoriously unexplained in its details, but is illustrated through a military image: when a phalanx comes to be scattered during a battle, then some soldiers begin to realign themselves, followed by increasingly more soldiers, until a principle of unity and order is recomposed (100a10-14). Likewise, many “scattered” memories come to form a cognitive unity until “the principle of art and science” just arises. Our experience by nature involves a principle of informational self-organization that culminates in the possession of universal principles: Aristotle seems to take it as a *primitive fact*, as he says that our soul “has such a nature that it can undergo this (100a13-14)” (i.e., this cognitive achievement). So, the transition from empirical proto-generalizations to the intellectual grasp of universals is a matter of fact, whose conditions of possibility are already implicit in our specific and somehow synthetic way of experiencing the world.⁵⁵ Likewise, in *Ph. I 1* the path of natural inquiry is said to start from what is better known to us (experiential content), to what is better known *per se* (principles, essences, universals). Significantly, experience as a starting point is characterized as being made out of “undifferentiated” universals.⁵⁶ We start from experiential generalities, therefore we gradually determine parts and principles, i.e., we reach intelligible contents that enable us to put an order onto experience: an order that must have already been potentially available in experience itself. Even in *Ph. I 1* Aristotle expresses such a transition through another example that works as an image of the general process he is talking about: we come to know natural principles in the same way as a child first calls

⁵⁴ As well-known, the same sequence can be found in *Met. I 1*, 980a29-981a30.

⁵⁵ It must be this way of experiencing that, as when “differently disposed” enables the grasping of essences according to (the second horn of) *De An.* 429b13, 20-21.

⁵⁶ We start from what is “confounded” (τὰ συγκεχυμένα), which are “wholes” as empirical generalities (τὸ ὅλον κατὰ τὴν αἴσθησιν γνωριμώτερον, τὸ δὲ καθόλου ὅλον τί ἐστὶ”, *Ph. I 1*, 184a25-25).

all women “mother” and all men “father”, and then learns to refer to only her/his mother and father in those terms. In summary, the reception of noetic contents arises just like the spontaneous unification of soldiers into a unitary phalanx (*An. Post.* II 19), or like the writing on the totally smoothed wax of a writing table (*De An.* III 4), or like a child learning how to better select the right *denotata* of his or her words (*Ph.* I 1). Before $\nu\omicron\tilde{\upsilon}\varsigma$ is present –as a *capability* for thinking as in *De An.* III 4, or as a *possession* of principles as in *An. Post.* II 19, or as a *path* to possession of physical knowledge as in *Ph.* I 1– there is *nothing else* than scattered soldiers, or a smoothed piece of wax *plus* our experience, or pre-rational children clumsily grouping similar items by experiential association. From these metaphors, only our human perceptual experience with its principles of self-organization is all that grounds the very possibility of $\nu\omicron\tilde{\upsilon}\varsigma$. It is quite natural to complain against the absence of a detailed explanation of such a discrete transition, as scholars often and legitimately do,⁵⁷ but we should keep in mind that after decades of philosophy of mind and cognitive sciences, we are not in a much better position to account in detail for the gap between the nature of sensory information and the rise of conceptual abilities as involving autonomy of thought, rational responsiveness to reasons, the possibility of propositional knowledge and the like.

In any case, a satisfactory way out for Puzzle I will only be reached by examining Puzzle II, as we do now.

2d) “Resolution” of Puzzle II (from *Separability* to *Spontaneity*, from *Spontaneity* to *Self-Thinkability*)

- 1) $\nu\omicron\tilde{\upsilon}\varsigma$ itself is also a $\nu\eta\tau\acute{o}\nu$ just as the other $\nu\eta\tau\acute{\alpha}$ are (430a1-2).
- 2) For objects without matter, that which thinks and that which is thought are the same (a2-3).
- 3) Theoretical science and what is known in this way are the same (however, we must enquire why we do not think always) (a4-5)
- 4) However, in things that have matter each of the $\nu\eta\tau\acute{\alpha}$ is present in potentiality (a6-7).
- 5) Consequently, $\nu\omicron\tilde{\upsilon}\varsigma$ will not belong to those things (for it is the potentiality of becoming them without their matter), though being a $\nu\eta\tau\acute{o}\nu$ will belong to $\nu\omicron\tilde{\upsilon}\varsigma$.

Point (1): $\nu\omicron\tilde{\upsilon}\varsigma$ is thinkable just like any other first-order intelligible. Thus, it is such not in a different way from how other thinkable entities are thinkable.

⁵⁷ See Barnes 2002, 235ff.; Kahn 1981, 388ff.; Von Fritz 1964, 50ff.

Point (2) explains that for things without matter, what thinks and what is thought are the same. What does this mean? It is the Assimilation Model: $\nu\omicron\upsilon\varsigma$ becomes formally the same as its objects; if it thinks [tree] it “takes in”, or re-actualizes, universal form [tree] without matter, i.e., without any individual tree (whose matter is just what makes a tree a particular, individual tree). However, if it thinks or contemplates, say, an abstract entity such as a given geometrical theorem T (that has no matter, which would make it a particular instantiation of the [theorem T]), it *simpliciter* becomes the theorem T, as it comes to be its own content. Assimilation thus works differently for matterless objects. In other words, a theorem as a universal truth *is* the thought of it, and the thought of it *is* the theorem in a certain way. The thought of the theorem that is the same as the theorem is not my thought as a psychical subjective act, it is the theorem as a thinkable object, as an object of thought (but, that the thought is *my* thought, is a contingent and irrelevant fact). So, if *my* $\nu\omicron\upsilon\varsigma$ is the same as its object, it is such not through being *mine* but through being $\nu\omicron\upsilon\varsigma$, or the thinking-capacity as such.⁵⁸ Point (3) illustrates the Sameness Thesis through the case of theoretical science and its object.⁵⁹ Point (4) contrasts things without matter with things with matter,⁶⁰ such as individual trees, which have *universal forms* only in potentiality: even if a tree has its objective form/essence independently of being known by anyone, such a form *as a thinkable item*, as a universal content, and as a $\nu\omicron\eta\tau\omicron\nu$, is in the tree only potentially. Once this form has been acquired and is in a way in the soul,⁶¹ it is a universal in potentiality in a different way from the way it was in potentiality in the particular tree. It has already been universalised and “detached” from the particular tree, which is why it can be re-actualized at will even without any further perceptual encounter of a tree. In any case, a $\nu\omicron\eta\tau\omicron\nu$ in actuality *is* a $\nu\omicron\omicron\upsilon\mu\epsilon\nu\omicron\nu$, namely, the actual object of a $\nu\omicron\upsilon\varsigma$, so therefore $\nu\omicron\upsilon\varsigma$ does “belong” to it. Point (5) draws a twofold conclusion: $\nu\omicron\upsilon\varsigma$ does not belong to particulars (like trees), as it is simply the capacity to become them without matter, i.e., to universalize their forms as abstract thinkable contents, and to become/receive the universal [tree]. However, being a $\nu\omicron\eta\tau\omicron\nu$ belongs to $\nu\omicron\upsilon\varsigma$. There is an asymmetry between the

⁵⁸ What makes my $\nu\omicron\upsilon\varsigma$ mine is my body and the experience that works as a matter for $\nu\omicron\upsilon\varsigma$. This holds for theoretical functions, but practical intellect is a different story, as this is essentially mine insofar as my actions are mine.

⁵⁹ Here I disregard the remark that “it is to be enquired why intellect does not always think” (430a5-6). Our intellect becomes only *contingently* identical to its object, but our embodied cognitive structure brings us back to new incoming perceptual contents; our needs, emotions and desires make us engage in practical reasoning, so we return “human”.

⁶⁰ Point (4) implicitly refers back to 429b10-21, where degrees of separability of $\nu\omicron\upsilon\varsigma$ have been connected with separability of forms from their matter.

⁶¹ See II 5, 418a21-24: spontaneity depends on universals being in some way in the soul, while particulars are outside.

correlatives νοῦς/νοητά.⁶² How does this conclusion suggest a way out for the two aporetic horns of the original dilemma (Puzzle II)?

What does make νοητά *both* νοῦς and the other νοητά? If νοῦς is the absolute capacity to become any thinkable content (any universal), and thinkable contents are universal forms only potentially present in particulars with matter, then B¹'s conclusion is false, because the other νοητά do *not* have any absolute capacity to become any other νοητόν (so they do not have νοῦς), rather they are potentially present in “their” particulars. The νοητόν [tree] is potentially present only in trees, but not in stones, while νοῦς is potentially [tree], [stone] and any other intelligible content; the potentiality of trees to “become” the universal [tree] is *nothing else than* the capacity of νοῦς to become [tree], that is, to abstract away the universal [tree] from the particular trees. So νοητά *qua* νοητά are such in virtue of νοῦς,⁶³ but *not* insofar as they share the common form [νοῦς] with νοῦς, as for B¹. However, νοῦς is not a νοητόν in virtue of any positive feature other than itself that it shares with the other νοητά as for B², which would deny Unmixedness. Νοῦς is νοητός in virtue of νοῦς (*per se*), just as any other νοητά are such in virtue of νοῦς, but not because both νοῦς and the other νοητά *have* νοῦς, but because both can become universal contents of νοῦς. The conclusion of B¹ is false, but its first premise is true while its second premise is false, which is why its conclusion is false. B² is literally false, but it may be taken to be true in a qualified way, which makes it compatible with Unmixedness if we attempt to account for the entailment from *Spontaneity* to *Self-thinkability* announced but not explained by Aristotle (429b6-9). To do that, some speculation is required.

How can νοῦς ever *become* itself? It should be other than itself, as it is so totally unmixed with itself (Assimilation Model + Unmixedness). It *can* think itself only insofar as it has become at least some other first-order νοητόν. As it has no positive form in its purely negative nature, to “directly” grasp it as such is impossible, just as it is impossible to directly know the substrate of a change without any cognition of the forms it acquires and loses over time.⁶⁴ However, its negative nature alone makes it “transparently” become a given form F, and so it is still F in potentiality but in a different way from before: it is F both in actuality and in potentiality. Now, as soon as it can re-actualize *ad libitum* the previously acquired form F, it can also distinguish itself as pure potentiality

⁶² According to *Cat.* 7 (7b22-8b12) the ‘intentional’ relatives like perception and science are temporally, ontologically and logically posterior to their respective correlatives (the sensibles, and what science is science of). The νοῦς/νοητά relationship fits into this very scheme for asymmetrical ‘intentional’ correlatives, but here I am pointing to another kind of asymmetry, peculiar to this ‘intentional’ couple: being a νοητόν is a property that essentially belongs to νοῦς, while ‘having’ νοῦς does *not* essentially belong to things that are νοητά.

⁶³ This is why the noetic soul is “the form of forms” (*De An.* III 8, 432a1).

⁶⁴ See *Ph.* I 7, 191a8-11.

from the forms it is actually and contingently identical with.⁶⁵ Its Spontaneity enables its Self-thinkability by enabling cognitive access to the difference between a positive form actually present in it and the capacity of becoming such a form and *any* other possible form: by enabling access to the difference between $\nu\omicron\upsilon\zeta$'s *being* and one of its occurrences, Spontaneity makes it discriminate itself from its contents. It needs not be other than itself to become itself, but it needs to *become* other than itself to grasp itself as an unlimited capacity of remaining the same despite becoming other than itself. Therefore, $\nu\omicron\upsilon\zeta$ is a $\nu\omicron\eta\tau\acute{o}\nu$ *per se* in one sense (B¹) and *per aliud* in another (B²). These senses make the horns of the dilemma quite compatible, so that the alleged dilemma is a false one. This is a typical way of going through an *aporia*: two apparently incompatible propositions are shown to be compatible if both are taken in a qualified sense.

It is worth pointing out that the issue of Self-thinkability does not, at least on the present reading, concern individual self-reflexive awareness or similar mental capacities: the latter are not “separable” from the individual body or from the constantly incoming experiential information. Self-thinkability rather concerns a much more abstract feature: thinking $\nu\omicron\upsilon\zeta$ is grasping what its *being* is,⁶⁶ i.e., as a general capacity for thinking everything. It is as *impersonal* a feature as its object is, which is the very capability for thinking in general (as a universal form, without matter), which boils down to the idea that *everything is thinkable*. When you and I think F, we share the same universal form or what-it-is-to-be-F, so when you and I think $\nu\omicron\upsilon\zeta$, we share the same universal form or what-it-is-to-be- $\nu\omicron\upsilon\zeta$. We can share our thoughts but not our experiences precisely because the content of our thoughts is universal, so those thoughts are “separable” from our individuality, our bodies, our experiences and $\phi\alpha\nu\tau\alpha\sigma\acute{\iota}\alpha\iota$. When we are thinking in the strong Aristotelian sense of $\nu\omicron\epsilon\acute{\iota}\nu$, our epistemic condition is, so to speak, completely de-individualized.

If Self-thinkability is made possible by Spontaneity, Spontaneity is made possible by Separability (429b5-9). I have suggested that Separability is both

⁶⁵ I agree with Lewis 2003, 106ff., rather than Driscoll 1992 and Wedin 1989a, that between $\nu\omicron\upsilon\zeta$ and its object there is no *stricto sensu* identity but *accidental sameness*. The object of $\nu\omicron\upsilon\zeta$ are universals, so there cannot be *numerical* identity between $\nu\omicron\upsilon\zeta$ and them, instead at most there can be “specific” sameness at most. But as $\nu\omicron\upsilon\zeta$'s nature *ex hypothesi* remains unaffected by its objects and can become “the same” as *any* universal, such a sameness cannot be other than accidental. It cannot just be identity, on pain of entailing that all universals are identical or $\nu\omicron\upsilon\zeta$ is different from itself (on this, see also Lewis 1996). A universal form F and $\nu\omicron\upsilon\zeta$ are the same but not *in being*, this is why $\nu\omicron\upsilon\zeta$ can become [tree] without just having [tree] as its being (its being remains unaffected as the absolute capacity to become [tree] and whatever else).

⁶⁶ This reading is shared and duly argued for by Gregoric/Pfeiffer 2015.

definitional and functional.⁶⁷ Intellectual achievements are prepared by perceptual cognition but are constitutively autonomous. We can re-actualize possessed universals at will, and this activity is free from external stimulation and somehow removes any passivity still present in our first encounters with those universals, as their original acquisition was experience-driven. I have suggested that φαντασία already exhibits certain features that make it partially analogous to νοῦς: thanks to it our cognitive system can *store* perceptual contents and use them to anticipate what is to be experienced, these contents can be “spontaneously” re-activated, and go beyond present perceptual stimulation. Nonetheless, when animal φαντασία is not guided by will as it can be in rational beings,⁶⁸ it is still driven by present perceptual stimulation, so even if it involves empirical syntheses it still inherits the passivity of perception, which only concerns present particulars. So, without thought, φαντασία concerns perceptual contents and is perception-driven. Intellectual activity is “separable” as it can be free from present experience in such a way that a subject virtually removes all individuality and all embodiment through thinking. Even though φαντάσματα are essentially embodied and individual, they work as proximate matter for thoughts neither *qua* embodied nor *qua* individual, so that νοῦς can freely use φαντάσματα to prepare a re-actualization of noetic contents. This is a way that its activity is “separable” (in the above qualified senses) from individuality and embodiment, and thus can start off self-actualization. This hypothesis is somewhat sketchy, but suggests how Separation can ground and enable Spontaneity in Aristotle’s view.

We can now summarize our reading of the Puzzles. For Puzzle I, νοῦς can well be radically impassive *and* absolutely receptive: it becomes like forms without being any positive form and without changing its negative nature even when positively informed. It can “suffer” in a qualified way even if it has *by its own nature* nothing in common with anything,⁶⁹ because the Assimilation Model in intellection does not work exactly like it does in perception. For Puzzle II, νοῦς can think νοῦς just as it can think any other νοητόν, but it must have acquired another νοητόν before thinking νοῦς. Thus it is a νοητόν *per se* in the

⁶⁷ Politis 2001 also argues (convincingly) that νοῦς is separable from the body in account but not in existence, but it cannot be denied that in addition to the separability in account Aristotle is also committed to a certain functional/operational autonomy of νοῦς. Intense intelligibles do not ruin the capacity but make it better toward less intense intelligibles, which is an argument for separability that does not have to do *only* with the account, it also involves a sort of functional autonomy from the physically implemented capacities. But autonomy is not existential independence from the body.

⁶⁸ This is the difference between φαντασία αἰσθητική and φαντασία λογιστική (III 10, 433b29).

⁶⁹ Even if ἀμιγής belongs to Anaxagoras’ lexicon and not to Aristotle’s, it is worth remarking that in Aristotle’s own chemical theory μίξις (differently from σύνθεσις) is a combination which *changes* the natures of its original components (see *De Gen. et Corr.* I 10, II 6-8).

first place, but it is only *per aliud* that νοῦς can in fact come to be able to think of its own being. Going through the *aporai* is a dialectical way to shed light on the inquired object: the two Puzzles are not a digression or just an obstacle to be removed, but they have a precious function in the economy of Aristotle's inquiry. If going through Puzzle I makes us understand how *Unlimitedness* entails *Unmixedness* and *Unmixedness* entails *Separation*, and how all this does not generate inconsistency, going through Puzzle II makes us understand how *Separation* entails *Spontaneity* and *Spontaneity* entails *Self-thinkability*, and how this does not generate inconsistency either.

3. CONCLUSION

Has the programme stated at the *incipit* of III 4 been completely realized? The inquiry has addressed in detail question (a) (about separability), question (a¹) (about what type of separability) and question (b) (about νοῦς' *differentia* or what-it-is). Question (c), about *how* thinking comes about, has only been addressed partially. So far, we know that thinking arises as a peculiar sort of "suffering" from the νοητὰ in the first place, but such objects do not directly inform νοῦς in the same way as sensible forms inform senses/organs (through a physical causal impact). Rather, they are received by νοῦς through our experiencing, but originally the very same νοῦς comes about in our souls together with the first receptions of universals, until then it is, so to speak, potentiality *of itself*. Thought can then develop as something that can be directly started "from inside" (Spontaneity) independently of any present incoming information. Thinking is thus environment-driven first, then it becomes able to be self-driven. This is "how thinking comes about" according to III 4. However, this remains an unfinished story, as until the *Actuality Principle* underlying the Assimilation Model is fully vindicated, universals are only potentially present in experienced particulars. However, as our νοῦς receives them there must be something that is F in actuality if a cognitive principle has to become F according to the Assimilation Model. My own view (without any specific justification) is that the so-called Active Intellect introduced in III 5 does this explanatory job. The Active Intellect is neither God nor an immortal part of our soul, but is rather the unified system of essences and principles or the World Order eternally holding in Reality. Even if it is called νοῦς as it is essentially thinkable and thus somehow connatural to thought, it is the objective formal structure of the Universe, and thus it is what our individual intellects receive and are actualized by. This ultimately makes our νοεῖν begin and come about, and it is this that is responsible for "writing the contents on the tablet". However, grounding and articulating this suggestion is a task for another paper.

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