Knowledge and justification of the first principles

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The claim that knowledge is grounded on a basic, non-inferentially grasped set of principles, which seems to be Aristotle's view, in contemporary epistemology can be seen as part of a wider foundationalist account. Foundationalists assume that there must be some premise-beliefs at the basis of every felicitous reasoning which cannot be themselves in need of justification and may not be challenged. They provide justification for truths based on these premises, which Aristotle unusually call principles (*archái*). Can Aristotle be considered a foundationalist? Are his first principles necessary premises to right inferences? We will look at the issue here.

In section i) I describe one of the central differences between Aristotle's epistemology and standard epistemological views. More differences will be seen as I proceed. In section ii) I present the problem with the standard classical foundationalism and lay out his notion of a first principle. Section iii) examines whether these principles provide a sound justificatory framework. Section iv) confronts a side-issue concerning sense-experience and finds some features which set the Aristotelian foundationalism apart from most classical foundationalisms in questions which are vital to them. Section v) provides an answer to the question whether Aristotle's foundationalism is givenist or not, and whether it may still be apt for resisting wide o narrow sceptical challenges.

i) The difference between knowledge and belief

Epistemology has never been the same since E. Gettier challenged the traditional account of knowledge as justified true belief (JTB). This discipline has evolved in different ways since. In most cases philosophers have tried to find an answer which mitigates some of the worst side-effects of Gettier's challenge. It has not found, though, the argument which brings epistemology back onto the track of JTB.

Before exploring Aristotle's epistemology, we should be aware of the historical and conceptual gap which stands between the 4th century B.C. and the relatively recent time in which the JTB account saw the light (1950s) in contemporary epistemology. Much has happened in philosophy and epistemology since Aristotle's time. This formidable gap is not easily filled with the array of qualifications which will occupy us for most of this article. Clearly, the Gettierised concept of justification is foreign to the Aristotle's. Aristotle did not have to face the wide or systematic sceptic challenges which were articulated in the modernity. He had no reason to think that the sistematic application of doubt makes the external world fully delusive and that, as a result, the main job of every responsible epistemology should be confronting sceptical paradoxes. Still, his views on scepticism are rich, and we will have time to review them in the final section.

Consider a first difference between Aristotle's epistemology and JTB-inspired projects. In current epistemology it is commonly assumed that a belief merits justification when some qualification is added to the fact that the belief is true. This qualification will normally build upon a prior and safe belief whose truth is generally beyond dispute. The belief that water is a clear, colourless and tasteless liquid can be said to be justified when some qualified reasons are given for its truth; such as the claim that this is the way in which people have always perceived water to be. The JTB

account accommodates this intuition by assuming that beliefs become knowledge when they are justified by well-established or creditable reasons. Thus, note that in current epistemology the concepts of belief and knowledge are in fact not too different. If a justified belief is a belief irrespective of whether it is justified or not, there stands no intrinsic difference—a difference in nature or species—between a belief and a justified belief; for a justified belief is still a belief under-the-hood. This view, common to current epistemologies, might be called 'incremental', for it makes a belief worth of credit by clearing obstacles to its trustworthiness in one or several stages.

Yet Aristotle does not have an incremental view of knowledge. Knowledge *(episteme)* is not a kind or species of belief *(doxa)* (cfr. Burnyeat, M. F., 1981: 106) whether upgraded or not; the difference between *doxa* and *episteme* is clear and persistent in his works. While *doxa* is an ordinary belief which may be creditably accepted when expressed, *episteme* is a proposition of science which is made true by a syllogistic or deductive chain of true propositions. *Doxa* is about contingent, changeable truths; *episteme* concerns only what is eternal and necessary (cfr. An. Post. I 8). Whereas beliefs may be true or false, scientific claims must necessarily be true, or then not be scientific at all. As a result, the gap between *doxa* and *episteme* is too big to be happily filled; for Aristotle, the difference between both is wider than in contemporary epistemology. A different thing, however, although related with it, is that some *endoxa,* or common beliefs, need not the reassurance of science to be considered creditable knowledge.

A second difference between Aristotle and the standard account is this. Aristotle deems knowledge to be a *hexis* (cfr. Burnyeat, M. F., 1981: 132) or an ability much more than a proposition. Aristotle attaches as much value to cognitive states as he attaches it to true sentences. He stresses in EN VI 6 that *episteme* is an *apodeiktikē hexis,* that is, a demonstrative ability. At its core, this ability can be described a capacity to know some fact as universal and necessary. p, or the proposition which expresses this fact is a linguistic expression of this *hexis*. This expression can be right or wrong with respect to the thought which it expresses, and true or false with respect to the state of affairs described by p. So there is some reason to claim, as Aristotle does, that truth or falsity should not primarily be said from sentences, because sentences are fallible in their expression of a *hexis,* but from subjects on their cognitive acts (To reinforce the idea Ross comments that one thing is the external assent of the verb, and a different thing the mind's assent; Ross, W. D., 2001: 540).

ii) Aristotle on the first principles

Foundationalism is a view inspired by the search for a robust starting-point for knowledge. What might be called 'classical foundationalism' stems from the view that 'a justified belief must have some source of justification, mediate or immediate, that is not inferential or belief-based, nor of a sort that involves a belief's being based on some other belief as a reason' (Sosa, 2009: 24). In a system of truth, a foundational belief provides a robust starting-point for other beliefs. The first belief is allegedly a source of warrant and a first basis or step of any other cognition.

To find this starting-point is not straightforward. Foundational strategies usually refer to some character of one's own conscious experience at the time (cfr. id.: 30) as a safe epistemic warrant that some content has been infallibly transferred or given to the mind. From this content knowledge can get started. Yet the problem for most of these strategies is the characterisation of such a 'given'. If we assume that this given is captured by a perceptive biological device, it must be assumed that our sense-organs must confront the world in terms which are partially non-epistemic. So is articulated by givenists that the non-epistemiticity of raw physical inputs guarantees a real contact between our cognitive faculties and the outside world. The question, however, is how this may occur, that is, how what is non-epistemic suddenly becomes epistemic and how non-epistemic elements give rise

to workable perceptual beliefs. We do not seem to have a cogent theory which articulates a change of this kind. Even if we rule out the suggestion and simply hold to the idea that the given necessarily captures external qualities because it is an object of direct awareness, we still meet with difficulties with the idea of the given. W. Sellars, who characterised the given as something so ineffable which would be probably beyond the reach of our concepts, called it a myth, the 'myth of the given'. Sosa sums up the problem facing a givenist foundationalism in this way:

> 'More specifically, foundationalism has yet to vindicate our justified application of the thicker concepts required if we are to move adequately from the given to what lies beyond consciousness itself. For example, we still wonder how we might be justified foundationally in applying our geometric concepts to our experience. How might one explain such classical foundational justification? This is not just a peripheral issue for classical foundationalism. Without at least one sketch of an account, only a vacuum is left (...)' (Sosa, 2009: 27-28).

Classical foundationalism considers that a perceptual belief cannot have the infallible nature of the given. Whereas the non-epistemic given is made the ultimate source of justification, perceptual beliefs drawn from it—which are epistemic—fall in the territory of the uncertain. Of course, the move leaves the given aloof from our space of concepts, that is, from the perceptual content which can be mapped and analysed by concepts. And so the given remains fatally underdetermined. We do not know much about it because there is not much that can be epistemologically said of it.

In the face of this, we might ask: is Aristotelian foundationalism a version of classical foundationalism? Is there any given, whether describable or not, in Aristotelian foundationalism? To canvass both questions, I will examine Aristotle's structure of knowledge and justification in some detail. I must stress from now that his foundationalism cannot be accommodated in the justificatory framework of JTB accounts. It is rather a part of a wider epistemological project in which sceptical issues—that is, issues related what justifies a subject in believing that p—are not at the forefront of philosophy, nor probably should be considering his views on knowledge and justification.

We know that knowledge in Aristotle is irreducible to belief. He considers that knowledge *par excellence* is demonstrative *(apodeiktikē epistēmē)* as a *hexis.* Demonstrative knowledge is a means for the acquisition of truth based on a syllogism. The premises of a syllogism contain 'primitive, immediate and more familiar' (An. Post. I 2, 71b 21-22) truths than the conclusions which are derived from them by syllogistic reasoning. Some of these premises are, of course, more basic than others. A few of them will be so elementary that they will become the governing principles of knowledge. Their acquisition can be called 'knowledge' both in a general and trivial sense, since they will be non-inferentially acquired. In EN IV 6 Aristotle wants us to avoid thinking that they are the object of *episteme.*

They are rather 'the principle of science' (An. Post. I 33, 88b) or indemonstrable knowledge, since it is beyond *episteme* to establish or question these principles. Although I called them so, they are 'premises' in a loose way, since the move from premises to conclusion pertains to *episteme*. There are two kinds of 'premises' of this sort: a first set are (1) the basic or elementary truths of every scientific discipline. Ideally, every proposition in science will be inferentially derived from them. By felicitous syllogisms, these propositions will inherit their truth. The other set of premises represent (2) the very basis of knowledge *(axiomata).* Thinking could not start and go ahead without them. They are probably more basic than we may imagine, and they probably suit our standard concept of belief less than we imagine too. To begin with, they must be forcibly and trivially true; Aristotle is so confident of their truth that he remarks—in an unusual tone—that only by lack of education may someone challenge them (cfr. Met. IV 4, 1006a 5-7). I will refer to both types of

principles as (1) the scientific or proper principles of knowledge and (2) the common principles or *axiomata* and discuss their claim to be truly foundational.

These principles, and especially the common principles, are the basis of our body of truths. Certainly, he does not think that his theory of demonstration is a guide to formalise research (cfr. Burnyeat, 1981: 116), but he believes that 'all knowledge and all learning of the discursive (*dianoetike)* sort arises out of pre-existent knowledge' (An. Post. I 1, 71a 1-2). There is a way in which the first principles provide a firm basis for our everyday reasonings. Common principles are the ultimate source of justification in any body of knowledge. They must be unquestionable in the full sense; if they were upset, every scientific proposition, no matter how robust, in the first case, and the general claim to truth of common and ordinary beliefs, in the second case, will inevitably collapse. Whereas a challenge to proper principles may have an impact just on some particular science, a challenge to common principles would put us in a completely different scenario. The latter will elicit a blanket, overarching epistemic doubt which would prevent the epistemic enterprise from securing any truth. So we would help us very little by questioning (1) and (2). Of course, nothing prevents you to do so. It is not hard to imagine a situation in which the common principles might, or probably should be questioned. I will consider the case later.

First we need to say more about first principles. Proper principles are the first truths or basic premises of every science. Aristotle imagines an ideal science to be made of definitions, that is, of clear and concise propositions concerning its object or subject-matter. In general, definitions are logical devices which locate the genus of some object and find its difference among other objects in that genus. Proper principles are expressed in definitions (cfr. An. Post. I 8, 75b 31). Since they are first, that is, non-inferential, it follows that 'there will not be demonstrations of these' (An. Post. II 3, 90b 26). If these premiss-beliefs could be demonstratively inferred from previous premises, they could be traced back to more 'primitive, immediate and more familiar' (An. Post. I 2, 71b 21-22) principles, and so they could not be foundational. For this reason they are non-inferentially acquired. In regard to common principles — which are more basic than proper principles —, we are told that 'they are the most certain of all principles' (Met. IV 3, 1005a 22-23). Common principles cannot be proved by demonstration either and are non-inferentially grasped too.

Aristotle understands, hence, that demonstrative syllogism is a valid, albeit limited, process of knowledge. Its strength is ultimately contingent on the success of more basic intellectual activities and their objects. Among these, let us take common principles *(axiomata)*. He refers to *axiomata* as 'the principles of syllogism', pointing out that they are not hypotheses (cfr. Met. IV 3, 1005b 16), suppositions or postulates (cfr. An. Post. I 10, 76b 23-27), that is, reasonable assumptions which we make for the sake of the argument and which can be accepted without proof. Common principles include an array of elementary rules of inference which are perhaps too trivial to be painfully canvassed. One is the principle of non-contradiction, namely, 'that the same attribute cannot belong at the same time to the same subject and in the same respect' (cfr. Met. IV 3, 1005b 18-20). Another principle states that 'if equals are taken from equals, the remainders are equals' (An. Post. I 10, 76a 41). These principles are inherently and immediately true (*di auton*). The former, that is, the principle of non-contradiction involves by necessity that contradictory statements cannot be true (cfr. Met. IV 4, 1007b 18-19), or that, being sufficiently proven that some assertion is true, its negation must be false (cfr. Met. IV 4, 1008a 34-35).

Given the quasi-analytic character of the principle of non-contradiction, we might initially think that this principle must express an a priori truth. It does not. We do not have acquaintance with first principles based on the a priori. No one is privy to the contents of common principles. To be sure, we have direct awareness of them, but this awareness does not arise by reflection, but by

experience. These contents are, on the one hand, self-evident. On the other, being a sort of 'pre-existent knowledge' (An. Post. I 1, 71a 1-2), as Aristotle calls it, the contents of common principles await us one step further behind the cognitive front line. First principles are an inborn *hexis* or ability to make knowledge possible by providing some initial premises to science and to ordinary truths. Without these basic rules of inference, the world would not make sense to us. It is hard to imagine a real or possible world in which the principle of non-contradiction does not apply. How would that world be? What could we advance of the ontology of this world which can make some sense?

There is an intrinsic relation between common and proper principles. Proper principles of geometry, which may probably consist in basic definitions of objects such as the point and the line for Aristotle, are constitutively dependent on the nature of common principles. This is hardly surprising since common principles are so primitive that they virtually underpin any intellectual achievement; i. e. they are not premises to the inference of proper principles. If the principles of science could be inferred from common principles, they would not be primary and immediate in the aforementioned sense and so would not be foundational. Common principles are thought to be, therefore, metascientific rules (Cassini, 1988: 77), for they are beyond the analysis of science. Philosophy can deal with them but nothing too substantive can be derived from them. Principle do not specify further truths on the nature of substances; i. e. whether natural substances are mobile or not. Proper principles, in contrast, are less basic and work as the first premises of a science in a strict sense. Thus proper principles bring about *episteme* and are an essential part of their body.

iii) The structure of the justification of the first principles

The previous section spelled out a few caveats about Aristotle's concept of justification. More need to be said now. While Aristotle deems first principles to be self-evident, they are not self-justifying (cfr. Cassini, 1988: 75). They are the ultimate source of epistemic justification for him; nothing beyond them can justify knowledge. From the standpoint of philosophy, however, justification is an entirely different issue from the natural acquisition of principles. One thing is how we acquire our beliefs and another how we justify them. I will make this distinction rest on a high-order distinction between two kinds of knowledge: pre-existent and discursive. First principles belong to the first kind, its argument-based justification to the second. Justification is for Aristotle a valuable mark of epistemic warrant, but we justify our knowledge by discursive reasoning, namely, by arguments which find the cause of some phenomenon and are usually part of a propositional argument. These arguments do not inherit the necessary character of first principles and are not self-evident. The fact that first principles are known by everyone does not mean that everyone is justified upon grasping them. Justification of scientific and metaphysical clauses takes time; a first-time attempt to find the right reasoning on which a particular belief grounds is not failure-proof. Not everyone who succeeds in justifying her arguments must always succeed. Sometimes we lose sight of the circumstantial and variable nature of justification. Aristotle concedes it by claiming that 'it is difficult to be aware whether one knows or not. For it is difficult to be aware of whether we know from the principles of a thing or not' (An. Post. I 9, 76a 26-28).

Thus justification is not an ability exercised always with equal success. If we earned an argumentative and propositional defence of the first principles on the first grasp, no discussion would ensue as to the relevance or epistemological pedigree of these principles; their first grasp would entail for the subject to realise that they are the first in the justificatory line, and will not dispute it, for that will be self-evident too. Yet unfortunately, this is often not the case.

Philosophers have actively questioned or denied first principles. Aristotle believes that the first

principles are self-evident and that usually need no defence; he believes that any attempt to confute the principle of non-contradiction will be inconsistent at once. You cannot unsettle this basic rule on the claim that 'it is possible for the same thing to be and not to be' (Met. IV 4, 1005b 35-1006a 1) without tacitly and unspokenly endorsing its content. '[F]or Aristotle PNC itself lies behind all attempts either to refute or to defend it, as a necessary condition of the very possibility of such attempts' (Inciarte, 2005: 38). Similarly, while not impossible, it is hard to confute proper principles. The subject matter of Aristotelian physics is the mobile being. A quick look at the natural world reveals that 'either all or some natural beings are moving' (Phys. I 2, 185a 13-14). This can be taken for a basic self-evident and cogent principle. Few will feel inclined to deny motion in the natural world unless, like Parmenides and Melissus, we pit against it a rival theory based on different reasons. Aristotle stresses, however, that the arguments of Parmenides and Melissus 'grant what is false and are unsyllogisctic' (Phys. I 2, 185a 11), and further enquiry into the reasons why someone can staunchly deny motion shows why her position is untenable (cfr. Phys. I 2-3).

Aristotle deploys a same strategy for dissenters against common and proper principles. The dissenter is free to deny self-evident truths. These provide an epistemic framework for ordinary truths, while not being always premises for other truths down in the inferential line. First principles are universal in scope and so, cover a wider territory than common beliefs. As a result of it, it turns out that these truths are more knowable in themselves (cfr. An. Post. I 2, 72a 2-5). This means that in most contexts, despite the fact that these truths are harder to attain than any perceptual evidence, once the subject has understood them their vindication will be better placed than their denial.

Thus the justificatory effort to prove that first principles are foundational rest on a solid ground, but this effort is open to failure. Our defence of first principles is contingent on a number of factors. The existence of dissenters show that principles may not be suitably identified, or if identified, rightly linked to arguments on discussion. If justification is to be done by reasoning, that is, by further cognitive steps to the first principle, it is a different ability from the *hexis* which grasps principles and may not be on a pair with it. We might describe it as the ability of being guided by a principle and give it an accurate propositional description, probably for the understanding of the learned.

I am arguing that there are two separate noetic levels, one on which we grasp principles and is non-discursive, and one on which we deploy the arguments which sustain them. Propositions, of course, fall on the side of the discursive and so does justification. Arguments are intrinsically worded and propositional, whether they are externally expressed or not. Reasoning, as a logical interweaving of propositions, is a different ability. This ability is always propositionally framed. Hence not everyone proves to be equally skilled in articulating a first principle and even less, in exploiting its logical consequences in the way of Met. IV. Discursive *(dianoetike)* reasoning, whether supportive or unsupportive of a first principle, may evidence any of the usual symptoms of bad reasoning to truth; e.g. it may be based on false premises, contain high levels of ambiguity in its formulation, ignore a number of rules of logic and simply be false. There is no warrant in discursive reasoning that *p* can be an accurate or incorrigible expression of a first principle. Attempts of showing the plausibility of the principle of non-contradiction are vulnerable too, although probably less than other attemps. No matter how well we articulate a principle, the problem of justification is tied to arguments.

The only warrant against failure for Aristotle is the particular *hexis* which we call *nous*. *Nous* is the mind or the intellect as it grasps the first principles, thereby providing the first premises for a demonstrative science. *Nous* is non-discursive. Its contrast with discursive reasoning is of the utmost importance to understand why the intellect is thought to be infallible here. This infallibility concerns the *nous* when it realises what is proper to it, that is, the non-inferential and direct grasp of

principles and universals (cfr. An. Post. II 19, 100b 5-17). No surprise then that there cannot be error in the proper object of perception either (cfr. De An. II 6, 418a 11-16). An initial failure in *nous* would inevitably thwart a subject's ability to consistently think. The mind cannot afford failure at this crucial stage. At bay is something more basic than knowledge, namely, the ability to think. Without a non-discursive, first and robust grasp of the mind, knowledge would lack a foundation.

iv) Is sense-experience relevant to justification?

Thus we come to know the relevance of the *nous* in the justificatory frame. Aristotle's defence of its infallibility may sound unjustified to the modern reader, since he provides no further reasons for why this mus the case. In contrast to him, some classical foundationalists start their defence of principles not from the intellect, but from perception. We might wonder why Aristotle does not give perceptual beliefs a role in this, or why they lack foundational character. Empiricists see perception as a better candidate for being more close to reality than thinking. After all, perception seems a more basic cognitive structure. Foundationalism has often been characterised as the view that verification and justification rely on the evidence of one's own senses (cfr. Dancy, J. 1985: p. 86). So has classical foundationalism, and we can initially assume that Aristotle is a classical foundationalist here. He believes that all knowledge arises from experience. The mind is thoroughly empty at birth (cfr. De An. III 4, 429b 29-430a 2), progressively gathering its contents from sense-experience through the repetition of perceptual acts and experience (the active *hexis*, or the acts on which *nous* operate, here described as 'preexistent knowledge' cannot properly count as 'mental content', since they should be understood on the model of rules which allow thinking rather than objects of knowledge and belief).

The most relevant of these contents are known to the intellect by induction. Since 'induction' is a philosophically loaded term, I will use instead the Greek *epagoge*. It is not my intention to canvass the various uses of the term, but only to note that An. Post. II 19 presents it as the first act of the intellect as such. It is an act which draws a visible line between the intellect and the senses and so between rational and dumb animals. Although Aristotle attaches several meanings to it, *epagoge* could be seen as the *nous* working on sense-experience. There must be something in the perceptual content which enables the intellect to operate, for on Aristotle's conception the intellect is passive by default; this change for which the nous is ultimately responsible can only happen on the assumption that particular objects of perception are in place. 'No one can learn or understand anything in the absence of sense' (De An. III 8, 432a 5-7). As is obvious, the need for perceptual contents does not imply that perception is the grounding evidence from which first principles are inferred. If this were the case, the activity of the *nous* would be contingent on contents which would not be equally safe or warranted, which is obviously far from Aristotle's views.

The primary role of *epagoge* is the production of primitive universals *(proton katholon)* (cfr. An. Post. II 19 100a 16). As a raw act of the *nous*, it is a *hexis* which cannot miss its target; it cannot simply fail to yield universal contents from perceptions which are ready for conceptualisation.

While *epagoge* inherits the infallibility of the *nous*, it is usually assumed that sense-experience, which provides raw perceptual objects, is not a reliable source of warrant. Of course, the vast majority of our perceptual contents are safe, but it is not difficult to set up a case of self-deceptive perception. The epistemological industry has produced many of them in the last 30 years. Consider sensory hallucinations. Macbeth, haunted by his own guilt and his murderous intentions, is seeing a bloody dagger hovering in the air. But if the dagger is not there, what is Macbeth actually seeing? Much has been made of the critical failures of perception in cases of hallucination. On the basis of this, it is tempting to consider perception unprepared for warrant. So perception might be unable to

answering the basic demands of justification and truth-warrant. Hence all knowledge which has perception as its source, including first principles, might pre-emptively be held unwarranted. Thus the following question arises: how much of Aristotle's foundationalism depends on sense-experience?

Perceptual contents involve a host of issues of which I will only address one. To avoid possible misunderstandings, I will say from the outset that Aristotle's structure of justification does not rest on infallible or incorrigible sensory states. Let us summarise, for the time being, what counts as infallible or incorrigible knowledge for him. For something to count as such, it must be:

(a) a *hexis* (that is, an ability)
(b) which yields maximally universal content (such as universals and first principles)
(c) and is about something necessary and eternal.

Of these three features, perception only satisfies (a). Why does perception not satisfy (b)?

First principles stand at the opposite end of perception (cfr. Post. An. I 1, 71b 33-72a 5) in the cognitive spectrum. As the start of a gradually complex process, perceptual objects are relatively simple. In fact, they do not belong to what Aristotle calls the 'essence' of things; instead they capture their 'sensitive forms' or 'sensitive qualities' (De An. II 12, 424a 17-18), that is, external qualities of things which are particular in nature. Whereas seeing red is the perception of an instance of red—the red of some surface—the concept of 'redness' gives us knowledge of features common to every instance of the colour; so by becoming an object of the intellect, the concept makes itself somewhat independent from any surface. It is not any more an object of perception. So we come know the essence of red, whatever that essence is. 'Redness', not being perceptible, is a maximally universal content and can only be grasped by our intellect.

Why does perception not satisfy (c)? Obviously, to have some colour is not a necessary property of physical bodies. Most things are coloured, but their colour is not a necessary property of them. Aristotle sees colours as accidents of things, and as such, they do not belong to their substance (cfr. Met. VII 6, 1031b 22-28) and do not enter their definition. Aristotle expresses this by arguing that 'white' should not go in the definition of 'man', for not every man is white.

Perception is though a *hexis* (a) or an active disposition to know. It is describable as an ability, the ability to retrieve the sensory qualities of things without the matter (cfr. De An. II 424a 17-18). Of course, for its normal functioning it requires to have active sensory organs. The nature of these organs is taken on board when Aristotle concedes that they are capable of error. It is obvious that error is part of our perceptual experiences no matter its source. This is why perceptual beliefs are *doxa* and do not qualify to be *episteme,* which is, as shown in section i), scientific knowledge.

Aristotle's structure of justification does not rest on the reliability of perception. What is more, it is irrelevant to the exercise of *epagoge* whether perceptual beliefs are true or false. The grasp of first principles is in fact independent from the epistemic success of perceptions. If I take this patch to be blue when it is actually red, I will be not justified in believing that it is red, but I will nonetheless be justified to believe that a blue patch cannot be not-blue regardless the colour of the patch; we only need it coloured. Thus I can understand the principle of non-contradiction even if I misjudge the colour of some surface. Therefore, false beliefs may us lead to first principles as much as plain and blatant perceptual error. And a similar story could be told about the impact of perceptual beliefs on the proper principles of science. Counterfactually, only if someone were deprived from her sensory inputs or these inputs were manipulated with apt devices to deprive us from knowing, might proper

principles of science (e.g. those regarding motion) be inaccessible to her. Other things being equal, however, the proper principles will remain knowable and will still provide a foundation to science.

Epistemic justification does not stem from perception or relies on it. The internal constitution of sense-organs or their cognitive grasp cannot add much to it. What is then the role of perception in foundational knowledge? Aristotle conceives it as a necessary ability for the work of the intellect. Passive by nature, the intellect finds in perception the cognitive species it requires to operate. Its necessity, however, does not rest in the avowedly self-evidence of basic perceptual episodes. It is not a question of their being self-evident to us. Aristotle's central contribution to justification on this scheme is that perceptual knowledge establishes a cognitive relation with the world which gives the intellect (1) sensitive species to operate upon and (2) an answer to the passive nature of the intellect, which in its most specific sense is a potency or a power which can only be brought to act by the provision of images which is the job of perception.

As far as we can see, then, Aristotle's account of knowledge and justification departs in several points from the standard foundationalism. His view is more nuanced than one might initially expect from a JTB perspective. No wonder then that his ideas do not entirely fit in a contemporary scheme. For good or bad, his foundationalism is rather different from what Sosa calls 'classical foundationalism'. In order to have all aspects of this distinction considered, let us sum them up:

(df 1) Aristotle's foundationalism does not rest on beliefs *(doxa)*, but on first principles [section i)].

(df 2) The *nous* grasp the first principles immediately and non-inferentially.

(df 3) Common principles are of two kinds: common and proper. They are relatively independent from each other. Common principles are not premises to the inference of proper principles.

(df 4) While first principles are self-evident, they are not self-justifying. The grasp of first principles is infallible; however, its justification is not.

(df 5) The epistemic justification of first principles is not contingent on the truth-value of perception.

My suggestion is hence, to treat Aristotle's foundationalism as an irreducible type of foundationalism. No other foundationalist position combines in its structure the possibility of perceptual error with a robust defence of first principles. Such a combination, however, could not be rightly understood without the full reliability of the *nous*, which is the mind as such.

v) An Aristotelian 'myth of the given'? An answer to scepticism?

I ruled out the view that Aristotle's foundationalism has similar weaknesses to those of classical foundationalism as portrayed by Sosa. Now we are in a position to face the question which I left behind in section ii) whether there is any 'givenism' in Aristotle's first principles, that is, a warranted but indescribable epistemic content. The answer to this question, if successful, will set the stage for whether Aristotle's concept of justification can withstand a full-blown sceptical challenge, a question that I deferred to this section.

Let us note first that the myth of the given originally concerns non-epistemic elements in need or apt for conceptualisation. Givens in contemporary foundationalisms are typically rendered in non-epistemic terms, that is, in raw or physical sensory inputs. They do not constitute concepts and

place themselves beyond the logical space of concepts. On this respect, however, Aristotle's view of perception stands wide apart. He considers perception an acquisition of sensory forms by a formal potency of the whole human being. Sense-organs, while being part of such a potency, are not the potency as such. He explains that although the sense and its organs—its bodily parts—'are the same (…) their essence is not the same' (De An. II 12, 424a 25-26). The non-epistemic elements of perception, namely, the organs and their output, may provide an intelligible account of some aspects of perception, but not of our sensation. He stresses that sensation is not of a same nature with the physical 'magnitude' perceived (cfr. id., 26-28), not just in the sense that a sensation of pain cannot be equal in 'magnitude' to the magnitude or size of the object which causes us pain, but also in the sense that changes in sense-organs are only a necessary element of perception. It does not mean that they are self-sufficient to perceive. The perception of real magnitudes can only be sensed by our formal capacities. Hence, perceptual processes 'are not merely physiological changes, since the embodied sense-organ, in being thus physiologically changed, judges or discriminates the perceptible qualities in whose reception the physiological change consists' (C.C.W. Taylor, 1990: 138). Emphasising the role of matter in perception distorts Aristotle's account of the relation between external objects and sense-faculties.

Thus the givenist's view of perception is not akin to Aristotle's. His foundationalism cannot be called givenist inasmuch as the givenist's scheme tracks the causal link between our cognitive faculties and the external states of affairs. But if this is the case we might wonder: is perception the only possible source of givenism? Could we not find a given beyond the boundaries of perception? For instance, is not givenist the way in which Aristotle finds first principles to be *warranted?* I shunned discussion on this issue and I am aware that it needs some attention. I suggested that first principles are not epistemologically justified by the nature of perception, but by the nature of an infallible grasp of the *nous* or *epagoge*. All warrant should be placed on and limited to this *hexis.* But if this is the case, how do we know for certain that the intellect at its most basic stage cannot fail?

To confront this issue, let us consider that Aristotle's *nous* is fully immaterial. If some *givenism* might be attributable to his epistemology this can only refer to epistemic terms. A non-epistemic or physical element cannot be part of Aristotle's concept of cognition other than as a requirement of our perceptual faculties. However, while we may dispel the threat of givenism, on the way to a fair characterisation of Aristotle's concept of justification we find a deeper issue, and one which inevitably raises the problem of scepticism. Aristotle believes that while first principles are self-evident, its justification is not. The principle of non-contradiction is necessarily true. Nothing, however, is said about why this needs to be the case. The infallible grasp of the first principles seems self-warranted; its contents seem to be the ones which he describes and no other. And while we cannot give some positive justification for it, the question still remains: why?

On the one hand, we saw that Aristotle proves the principle by showing the inconsistency of the opposite view. On the other, this is a partially unresolved issue. He is very clear on the fact that the principle of non-contradiction is the cornerstone of justification. At the level on which we non-discursively capture the first principles, described in section ii), the *nous* must necessarily achieve its object. Failure at this attempt would counterfactually thwart any understanding of the world and us as epistemic agents in this world. Self-contradictory thinking or some thinking beyond the bounds of contradiction is no thinking at all. What we find in Aristotle is, as it were, more a fact than an explanation of the fact.

But we might find the elements of an answer in his account of simples. As an object of *nous*, the principle of non-contradiction and other truths are, in a sense, 'simple' *(aplós)*. He advances that the

space of contradictory pairs (p and not-p), that is, the space of what can be affirmed and denied—what we previously called discursive reasoning—is not the only epistemic ground which knows the intellect. There are other forms of cognition beyond *episteme.* Demonstrative knowledge is not the only form of cognition at the higher end. Any knowledge obtained by *episteme* can logically be affirmed or denied. But he calls the cognitive state in us which captures first principles 'truer' and more accurate than *episteme* (cfr. An. Post. II 19, 100b 5-12; Modrak, 2001: 106). The object of this cognitive states are 'simples' and they fall beyond the scope of opposite sentences (p and not-p). Simples or incomposites are objects which cannot be divided and have no contrary terms. In some cases, we understand terms like 'black' or 'evil' by contrast with their contraries (cfr. De An. III 6, 430b 22-23), but when it comes to what cannot have contraries such as being, knowledge cannot go wrong (cfr. De An. III 6, 430a 1ff), for there is no *real* alternative to being in the external world. Aristotle remarks that 'it is not possible to be in error regarding the question what a thing is, save in an accidental case' (Met. IX 10, 1051b 26). More specifically, he refers to 'essences and actualities' (Met. IX 10, 1051b 30) as objects about which cognitive error is excluded, because no contrary term can be found in its place.

Textual evidence about simples is scanty and widely disputed, but if what it presents is true, it seems that the classical truth-values do not apply to the most basic structures of knowledge. Knowledge can only tolerate error on its lower levels, not on its high ground. This explains why, when the *nous* addresses principles such as the principle of non-contradiction, there is no logical margin for error of the common kind, because the content of such a principle is a simple. Error can only accidentally infect it, such as when someone who is able and fit to perform an action, cannot perform it by some unpredictable event. For instance, if I try to unlock my front door with the right key, I may fail to do so if I try to do something else at the same time, such as picking up my newspaper from the doormat. Yet if I fail to unlock the door, this will not happen because I lacked the ability to do so or because there was something wrong with the key. It was only by some accident, unrelated to the key and the door, that having the ability to do so, I could not do what I wanted.

In a similar way, the grasp of principles may fail for reasons contingently connected to our intellectual capacities; nothing in the capacities themselves is prone to error. In this way, we know that the *nous* must be right insofar as it operates. Aristotle's reply to the scepticism about principles requires some understanding of the role the first principles in everyday knowledge. Aristotle has no deciding argument against scepticism, that is, an argument which confronts face-to-face scepticism and thwarts it. His account of simples articulates an explanation of why there must be a ground on which the *nous* grasp by nature the principles of reality, be they essences, actualities or first principles. So the question is whether once set the general structure of knowledge, we still need a knock out argument against scepticism. A full view of Aristotle's structure of justification lends little leeway to it. On close scrutiny, we see that his epistemology resists sceptical challenges as well as other accounts which claim to do so.

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