

ARISTOTLE ON THINKING*

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Many people nowadays want to argue that animals can think. There also are many people nowadays who even want to argue that machines can think. Fortunately, we do know that we human beings are thinking. The question just seems to be whether animals or even machines do anything sufficiently like what we are doing when we are thinking to make it informative or even enlightening to say that they are thinking.

Given the way we see or conceive of ourselves, we are in fact thinking a lot. Hence, one might think that it is at least perfectly clear to us what it is to be thinking. In this assumption we might be encouraged by having a certain view of the human mind according to which at least our thoughts are transparent to us, in the sense that, if anything is immediately clear to us, it is that we think and what we think, when we do think. But this seems to me to be a highly dubious assumption. And even if it were true, it still would remain a question what it is to be thinking.

One might try to answer this question by studying the way we think of, and talk about, thinking. But this would not necessarily settle the question, either, what thinking is, as there still might be room for the question: should we think of thinking in this way? In fact, it is not clear that there is such a thing as *the way we think of, and speak about, thinking*. And, even if there were such a thing as the way we think of thinking, it would not immediately follow that this was the right way to think about it.

Historically, part of the reason why we came to pursue such questions as whether animals or whether even machines can think, was in response to the widespread view that it is distinctive of human beings that they are rational,

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that they are endowed with reason. And good part of the reason why this was a widespread view was that it had the authority of Aristotle.

Aristotle assumes that it is distinctive of human beings – at least in comparison to other sublunary beings like stones, plants, or animals – that they have something which these other beings do not have, namely reason (λόγος or νοῦς). According to Aristotle, rationality is not just a further property that human beings have but other sublunary beings lack; it is a property which turns human beings into beings which are radically different from other beings in the way they function and behave. Moreover, it is because human beings are rational that, according to Aristotle, their behaviour is subject to moral evaluation. Hence, given the importance Aristotle attaches to reason or rationality, we might want to know what he takes reason or rationality to be, what he means to attribute to human beings, but to deny to animals, when he calls human beings 'rational'.

There is an easy and obvious answer to this question. We might think that Aristotle, in attributing reason to human beings, means to attribute to them the ability to think. And we might leave the matter at that, as many interpreters have been glad to do for a long time, thinking that we know reasonably well what it is to think and hence what it is to be able to think.

What should give us pause, though, is that, if we actually study Aristotle, it turns out that Aristotle himself seems to have the greatest difficulties in understanding and in explaining to us clearly what it is to think (νοεῖν), what it is to exercise one's intellect (νοῦς) or reason (λόγος). This, of course, may be due to the fact that Aristotle completely failed to understand a matter which as such is relatively clear and simple. I doubt this. And in any case, the question here is what Aristotle meant to attribute to human beings when he attributed the ability to think to them. And to answer this question we have to know how Aristotle conceived of thinking, what he thought thinking was.

Aristotle quite definitely thought that his predecessors, in particular his Presocratic predecessors, had not understood at all what thinking was. And so perhaps a good way to begin our inquiry into how Aristotle conceived of thinking is to look briefly at Aristotle's criticism of his earlier predecessors. There are in particular three passages which are relevant for our purposes, *Metaphysics* I.5 1009^a38 ff., *De Anima* I.2 404^a27 ff., and *De Anima* III.3, 427^a17 ff. In these passages Aristotle talks of the Presocratics' treatment of three functions, perceiving (αἰσθάνεσθαι), showing sense or being sensible (φρονεῖν), and thinking (νοεῖν). Of these three the second obviously needs some comment. We seem to have no verb which closely corresponds to the

Greek verb φρονεῖν. But the no even the verb 'to sense', in some by φρονεῖν. We say, for instance so, or 'he at least had the good to assume is...'; or 'he sensed the as students of Aristotle are ma its cognates in the sense of pra and commentators have a tendi be referring to even in passage show that this is not what Aris one of our passages, *De Anima* 19), explains φρονεῖν as referr wisdom. But, in many passage Aristotle is referring to somet realizing, if one lives in this se winter comes that it is time to whatever else it may be prude realize this sort of thing is a n Aristotle in many places also wisdom is just the form this ab perfected. But that Aristotle in the two other passages is not t ability, is apparent from the fa 427^a8, explicitly attributes havi the basis of this distinguishes i

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Greek verb *φρονεῖν*. But the noun 'sense' and its cognates, like 'sensible' and even the verb 'to sense', in some of their uses, capture some of what is meant by *φρονεῖν*. We say, for instance, 'the sense of the meeting was to do so-and-so', or 'he at least had the good sense to do so-and-so', or 'the sensible thing to assume is ...', or 'he sensed that he had to leave immediately'. We, of course, as students of Aristotle are mainly familiar with the use of *φρόνησις* and its cognates in the sense of practical wisdom or prudence. And translators and commentators have a tendency to think that this is what Aristotle must be referring to even in passages in which the context or parallel passages show that this is not what Aristotle can have in mind. Thus, in the case of one of our passages, *De Anima* III.3, Ross in his commentary (on 427^a17–19), explains *φρονεῖν* as referring to the exercise of the virtue of practical wisdom. But, in many passages in Aristotle, including ours, it is clear that Aristotle is referring to something much more modest, like for instance realizing, if one lives in this sort of climate and these surroundings, when winter comes that it is time to stock up on heating material and food and whatever else it may be prudent to do when winter comes. The ability to realize this sort of thing is a much more modest ability, indeed one which Aristotle in many places also attributes to animals. The virtue of practical wisdom is just the form this ability takes in the case of human beings, if it is perfected. But that Aristotle in the passage under consideration and hence in the two other passages is not talking of the virtue, but of this more modest ability, is apparent from the fact that Aristotle, a page down in the text, at 427^b8, explicitly attributes having sense or *φρονεῖν* to some animals, and on the basis of this distinguishes it from thinking.

Now what Aristotle says in these three passages about his predecessors' treatment of these three functions is this. In *De Anima* III.3 we are told that sensing and thinking are thought to be some kind of perceiving (427^a19–20), and that the thinkers of old actually identify perceiving and sensing (427^a21–22). Aristotle refers to passages in Empedocles and in Homer about human thought to support this, and continues by remarking that these thinkers were encouraged in this identification because they supposed thinking to be something corporeal like perceiving (427^a26–27). Thus Aristotle here presents things as if at least his early predecessors thought of sensing as some kind of perceiving, failed to distinguish between sensing and thinking, and hence thought of both thinking and sensing as some kind of perceiving. The passage in *De Anima* I.2 404^a27 ff. reflects the same view on his predecessors. Early on in the same chapter Aristotle has pointed out (403^b25–27) that it is thought that living things differ from inanimate things in particular in two

regards, they move and they perceive. Hence it is thought that an adequate account of the soul has to be such as to show why animate things move and perceive. Now in the passage under consideration Aristotle claims that there is a difference between Anaxagoras and Democritus. Democritus simply identifies reason or intellect ($\nu\omicron\delta\varsigma$) with soul ($\psi\upsilon\chi\eta$). For he takes reality just to be what appears to the senses ($\tau\omicron\varsigma\ \phi\alpha\iota\acute{\nu}\omicron\mu\epsilon\upsilon\omicron\nu$). And so he has no need to postulate an intellect as something distinct from the soul. The soul will suffice for our cognitive needs, since it allows us to perceive, and reality just is perceptible reality. The case of Anaxagoras, Aristotle claims, is more complicated. For Anaxagoras sometimes distinguishes between soul and intellect, as when he claims the intellect to be the reason for things well and rightly done, whereas sometimes he just seems to identify soul and intellect, as when he attributes intellect to all animals. He does not seem to realize, Aristotle says (404^b5–6) that the intellect, even if the word 'intellect' is just understood in the sense of ' $\phi\rho\acute{\nu}\eta\sigma\iota\varsigma$ ', does not equally belong to all animals. Again, the upshot of the passage is that philosophers like Democritus and Anaxagoras fail to distinguish carefully between the ability to perceive, the ability to show good sense, and the ability to think. Whether Aristotle is fair to Democritus is another matter we do not have to dwell on for our purposes.

The passage in *Metaphysics* Γ.5 in relevant regards is quite similar. It refers to some of the same authors, quotes some of the same texts, and again makes the point that 'Empedocles and Democritus and, we may say, each one of the others' (1009^b15–16) were caught in the assumption that perception amounts to having sense, that perceiving was a matter of being appropriately altered, affected, struck by things, and that hence what seemed to us to be the case on the basis of perception somehow had to be the truth.

What emerges from the three passages taken together is that Aristotle thinks that his earlier predecessors assimilate thinking to sensing and both to perceiving, in part because they do not see that thinking has a distinctive feature which makes it radically different from both sensing and perceiving. They have not understood thinking at all in its distinctive character. One reason why Aristotle thinks that it is clear that these three cognitive functions are radically different from each other is this: all animals perceive, but only some animals have sense, and only human beings have thought (*De Anima* III.3 427^b7–14).

The question then is: what according to Aristotle is so distinctive about thinking that it radically differs from sensing and perceiving? And the answer to this question should also provide an answer to the question why

Aristotle denies reason and this note of the fact that it is not ; but also that 'thinking' is not just have to look at, and reflect thinking'. In English it sounds and 'sensing' seem to refer to so does not. Perceiving and sensing realizes something, thinking d understand it. Perhaps we sh the possibility that we misper discriminate something, for in the ability to perceive and the realize something, to get some exercise of these abilities we the ability to perceive is an al case of perceiving has to be things right, if something did right. Analogously with think and sensing, it should be a m: be the exercise of an ability indeed, seem to me to be ho They refer to the ability to gra in contexts in which they co 'voûς' can mean something li way to understand the confu the crucial point here is that connotes a cognitive achieve:

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Aristotle denies reason and thinking to animals. At this point we have to take note of the fact that it is not just difficult to adequately translate $\phi\rho\omicron\nu\epsilon\acute{\iota}\nu$, but also that 'thinking' is not really an adequate rendering of $\nu\omicron\epsilon\acute{\iota}\nu$. We just have to look at, and reflect on, the list of functions 'perceiving, sensing, thinking'. In English it sounds like a list of heterogeneous items. 'Perceiving' and 'sensing' seem to refer to some cognitive achievement, whereas 'thinking' does not. Perceiving and sensing seem to involve that one recognizes or realizes something, thinking does not, and least not in the way we ordinarily understand it. Perhaps we should be more careful, as Aristotle allows for the possibility that we misperceive something, that we fail to recognize or discriminate something, for instance a colour. So perhaps we should say that the ability to perceive and the ability to sense are abilities to recognize or to realize something, to get something cognitively right, but that in a particular exercise of these abilities we may nevertheless get things wrong. Even so the ability to perceive is an ability to get things right, and so any particular case of perceiving has to be understood as a case in which we would get things right, if something did not intervene to prevent us from getting things right. Analogously with thinking. If thinking were parallel with perceiving and sensing, it should be a matter of normally getting things right, it should be the exercise of an ability to get things right cognitively. And this does, indeed, seem to me to be how the Greek words ' $\nu\omicron\epsilon\acute{\iota}\nu$ ' and ' $\nu\omicron\upsilon\varsigma$ ' are used. They refer to the ability to grasp or understand something. They can be used in contexts in which they could be replaced by ' $\alpha\iota\sigma\theta\acute{\alpha}\nu\epsilon\sigma\theta\alpha\iota$ ' or ' $\phi\rho\omicron\nu\epsilon\acute{\iota}\nu$ '. ' $\nu\omicron\upsilon\varsigma$ ' can mean something like 'sense' or 'wit'. And this, of course, goes a long way to understand the confusion Aristotle ascribes to the Presocratics. But the crucial point here is that the verb ' $\nu\omicron\epsilon\acute{\iota}\nu$ ', like 'perceiving' and 'sensing' connotes a cognitive achievement whereas the word 'thinking' does not.

And it is this aspect of thinking which Aristotle focuses on, when he talks about thinking. For in *De Anima* III.3 427^a20-21 he explains why one might think that thinking and sensing are some kind of perception, by saying that in both cases one discriminates something ($\kappa\rho\acute{\iota}\nu\epsilon\iota$) and thus comes to have cognition ($\gamma\nu\alpha\rho\acute{\iota}\varsigma\epsilon\iota$) of what is. So perceiving, sensing, and thinking are all there regarded by Aristotle as forms of cognitive discrimination. As we saw earlier, Aristotle in *De Anima* I.2 403^b24-27 says that the soul is thought to be characterized by two things, it accounts for the motion of living things and for their perception. When we come to the beginning of III.3 427^a17-19, Aristotle still says that the soul is characterized by two things, namely (i) motion, and (ii) perceiving, and sensing, and thinking. Obviously the phrase 'perceiving, and sensing, and thinking' is supposed to pick out the second

unnamed characteristic of soul, cognitive discrimination. The mistake which earlier thinkers made was to think that all cognitive discrimination, all cognition, could somehow be assimilated to or reduced to perception. We now know that we have to distinguish at least three forms of cognitive discrimination, and thinking is one of them. When in *De Anima* III.4 Aristotle turns to a systematic discussion of reason and thought, he will again regard thinking as a form of discrimination (429^b17–18).

With this we can return to the question what Aristotle takes to be distinctive of thinking as opposed to perceiving or sensing. Here taking note of a piece of Aristotelian methodology might help us to proceed at least in the right direction. Aristotle, having discussed in *De Anima* II.1–3 the notion of the soul and its constitutive abilities, at the beginning of II.4 turns to some preliminary remarks about how we should inquire into the constitutive abilities of the soul, for instance the ability to absorb and process nourishment, the ability to perceive, or the ability to think. And Aristotle tells us that in each case we have to look at the activity the ability is an ability for, that is to say, nutrition, perception, and thought. And here again, Aristotle tells us, we first have to consider the objects (*ἀντικείμενα*) these activities are directed towards, and he explicitly mentions (415^a22) nourishment or food, sensibles or perceptibles (*αἰσθητὰ*), and intelligibles (*νοητὰ*). The idea clearly is that to understand the ability to perceive we have to understand perceiving, and to understand perceiving, we have to understand what it is that we cognitively discriminate in perceiving, at least if things go well. Thus the understanding of colour-perception and the ability to perceive colours involves an understanding of colours. Colour-perception is what it is at least in part in virtue of the fact that it is a certain kind of cognitive discrimination of colours. To enable us to discriminate colours it has to function in a certain way. And Aristotle obviously thinks that to understand thinking we have to understand that thinking is a certain kind of discrimination of intelligible objects. At this point it is important not to quickly dismiss and pass over Aristotle's talk of intelligible objects. It is also important to be patient and not to immediately switch from talk about intelligibles to talk about objects of thought. For we have to keep in mind that when Aristotle talks about perceptibles he has something more specific in mind than just objects we can perceive or observe. It is crucial to Aristotle's theory of perception that perceptibles or sensibles first and foremost are the proper or specific objects of each sense, that is to say colours, sounds, flavours, etc. Once we understand how we perceive proper sensibles, we can also explain how, and in what sense, we perceive physical objects, or the so-called common sensibles like

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Aristotle begins the par of being a magnitude or th take it that Aristotle here by and hence distinguishes bet then similarly distinguishes which it is water, and the s of difficulties, but it seems : which is supposed to be ar Aristotle's remark that it i ability that we discriminate This clearly is supposed to intelligible item.

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in what Aristotle takes to be living or sensing. Here taking might help us to proceed as discussed in *De Anima* II.1–3. In II.1, at the beginning of II.4 we should inquire into the ability to absorb and process information. And Aristotle tells us that the ability is an ability for thought. And here again, Aristotle (*ἀντικείμενα*) these activities of perception (415^a22) nourishment or intelligibles (*νοητά*). The idea of perception we have to understand what it is, at least if things go well. Thus the ability to perceive colours and perception is what it is at least in the case of cognitive discrimination. It has to function in a certain way. To understand thinking we have to understand the discrimination of intelligible objects. I quickly dismiss and pass over the point that it is important to be patient and careful with intelligibles to talk about objects of thought. At when Aristotle talks about the intellect in mind than just objects we have to understand Aristotle's theory of perception that the proper or specific objects of perception are colours, etc. Once we understand how to explain how, and in what way, the so-called common sensibles like

shape or motion. Hence, we should also take Aristotle's talk of intelligibles seriously.

Now, when we actually turn to Aristotle's chapters on reason or intellect in the *De Anima*, namely III.4 and following, Aristotle clearly begins by following the method announced in II.4. He immediately (429^a12) begins with a discussion of the activity to be explained by the faculty or ability, namely thinking. Indeed, he immediately asks 'what is distinctive about thinking', and almost immediately tells us that, if thinking, though different from perceiving, is analogous to perceiving, it should be a matter of in some sense being affected by an intelligible, just as in perception we are affected by a sensible. Whatever we make of the details of this, the suggestion again is that, just as in perception we discriminate sensibles, in thinking we discriminate intelligibles. But if, on the basis of the methodological remarks in *De Anima* II.4, we expect Aristotle now to turn first to a discussion of intelligibles, of what it is that the mind is supposed to be able to somehow discriminate, before he goes on to discuss thinking and the intellect, we seem to be disappointed. For Aristotle just goes on talking about thinking and the intellect. But then, further down in the chapter, at 429^b10–22, we get a paragraph whose function is not immediately obvious from the chapter itself. But it seems to me, though Aristotle does not explicitly announce it as such, to be Aristotle's discussion of what the intelligibles are that the intellect is supposed to discriminate. In fact, Aristotle within this paragraph explicitly refers to the non-perceptual discrimination of a certain kind of item which apparently is supposed to be not a sensible or perceptible.

Aristotle begins the paragraph distinguishing a magnitude and its feature of being a magnitude or the feature in virtue of which it is a magnitude. I take it that Aristotle here by 'magnitude' (*μέγεθος*) means to refer to a body, and hence distinguishes between a body and the feature of being a body. He then similarly distinguishes between water and the feature of it in virtue of which it is water, and the same for flesh. The passage raises a good number of difficulties, but it seems fairly clear that it is in each case the second item which is supposed to be an intelligible. And this seems to be confirmed by Aristotle's remark that it is not by the ability to perceive, but some other ability that we discriminate the feature of flesh in virtue of which it is flesh. This clearly is supposed to be an example of the intellect's discriminating an intelligible item.

At this point I want to pretend, though in a way Aristotle himself refuses to pretend (cf. 429^b14–15), that we have done a good deal of more work on our account of perception and have got as far as having explained how we

can perceptually discriminate not just colours, sounds, and the hot and the cold, but also trees and human beings. So a human being will be a perceptible. So will be a body, water, or some flesh. But what it is about a human being which makes it a human being, its feature of being a human being is not a perceptible item, but an intelligible item. And the same for a body, water, some flesh, or a tree. We may call this non-perceptible, intelligible item, if we wish, an essence, as Aristotle in fact seems to do a few lines further down, in 429^b19.

Before we even try to proceed any further, we have to counter a possible objection. Somebody might object that Aristotle cannot possibly assume that thinking is a matter of discriminating an intelligible item like the feature of being a human being. After all, to account for thinking is to account for such things as the thought that Socrates is a human being or the thought that human beings are rational or a sequence of thoughts like: things which can think have a father and a mother; machines do not have a father and a mother; hence machines cannot think. So how can thinking be a matter of recognizing an intelligible feature like that of being a human being?

Here we have to keep in mind that Aristotle also thinks that, to account for perceiving, one has to account for a great deal more than just the perception of proper sensibles. One also has to account for the perception of observable objects and even for the perception of observable facts about observable objects. Nevertheless, his rather detailed account of perception in *De Anima* II.5–III.2 is entirely focused on the perception of proper sensibles. Obviously Aristotle assumes that the ability to perceive first and foremost is an ability to perceive proper sensibles, and that once we have understood how we perceive them we can go on to explain in terms of their perception how we can perceive objects and facts about objects, for instance that something is red. So we will, for the time being, just hope that Aristotle in the case of thinking similarly assumes that the ability to think first and foremost is the ability to think, that is to discriminate, intelligible features, and that we then, on the basis of this, will be able to explain what it is to think that something is the case or even to infer that something is the case.

So let us stay with the hypothesis that Aristotle does, indeed, assume that thinking first and foremost is a matter of discriminating intelligible features. Now, one reason why we insisted that this talk of intelligibles should be taken seriously, and not regarded as just a way of talking about objects of thought or objects thought about in some loose sense, is that, as is well-known, Aristotle actually believes that there are such intelligible items, that they are crucial constituents of reality, indeed crucial constituents of objects

like stones, plants, animals, or of our thinking about them. They are not perceptible, but in the background it is much easier that his Presocratic predecessor about thinking. He knows that intelligible items. And so it let alone recognized, that there are such items. This becomes apparent if we have been looking at. In the attributes to Democritus are in accordance with how we perceive is preceded by the remark that he failed to assume, namely that there are different kinds, namely items that are incorporeal and imperceptible such items that reality reduces to what is accessible to the senses.

Stressing the metaphysics helps to clarify what Aristotle might be a mistake to just dismiss the metaphysics involved. And the sensible and intelligible which are the metaphysics of forms and account of the perception of objects and of perception of objects and facts. We can perceive a proper sensible can, according to Aristotle, perceive have this feature. We can perceive to the same object. With rich or learn to perceive, the different look of the object. We perceive the object. And we ultimately of a kind of object, for instance obviously assumes, that an objects and kinds of object obviously having the look of objects as being a tree or being a lion like a lion always has to co-

s, sounds, and the hot and the cold. A human being will be a perceptible. That it is about a human being being a human being is not a different case. The same for a body, water, fire, perceptible, intelligible item, if we go a few lines further down, in

we have to counter a possible objection. We cannot possibly assume that an intelligible item like the feature of thinking is to account for a human being or the thought of thoughts like: things which do not have a father and a mother. Can thinking be a matter of being a human being?

Aristotle also thinks that, to account for a great deal more than just the perception of observable facts about the world, the account of perception in *Metaphysics* is an account of perception of proper sensibles. We perceive first and foremost is, once we have understood how things are in terms of their perception how things are, for instance that something is a human being. That Aristotle in the case of thinking first and foremost is the intelligible features, and that we then, it is to think that something is a human being.

Aristotle does, indeed, assume an account of discriminating intelligible items. This talk of intelligibles should be a way of talking about objects in a loose sense, is that, as is well-known, such intelligible items, that are the crucial constituents of objects

like stones, plants, animals, or even human beings. They exist independently of our thinking about them, for instance as substantial forms of objects. They are not perceptible, but they can be grasped by reason. Against this background it is much easier to understand why Aristotle is so convinced that his Presocratic predecessors did not recognize what is distinctive about thinking. He knows that they in their theories did not postulate such intelligible items. And so it is obvious that they could not have assumed, let alone recognized, that thinking essentially is a matter of discriminating such items. This becomes particularly clear in the part of *Metaphysics* I.5 we have been looking at. In this passage, as we saw, Aristotle, rather forcedly, attributes to Democritus and others the view that what appears to us in accordance with how we perceive things must be true. But the whole passage is preceded by the remark that the Presocratics will have to grant, what they failed to assume, namely that there is an entire set of entities of an altogether different kind, namely items not subject to any change, and hence, we might add, incorporeal and imperceptible. It is because they failed to recognize such items that reality reduced itself to phenomenal reality, the part of reality accessible to the senses.

Stressing the metaphysics involved in Aristotle's account of thinking helps to clarify what Aristotle has in mind and what he says. But it would be a mistake to just dismiss this account, because we do not accept the metaphysics involved. And so I want to try to draw a distinction between sensible and intelligible which does not at all, or at least not openly, appeal to the metaphysics of forms and essences. Suppose that on the basis of Aristotle's account of the perception of proper sensibles we could arrive at an account of perception of objects and even of kinds of objects of the following sort. We can perceive a proper sensible, let us say a visual feature of an object. We can, according to Aristotle, perceive incidentally the object which happens to have this feature. We can perceive any number of visual features incidental to the same object. With rich enough a cognitive apparatus we can perceive, or learn to perceive, the different visual features together, or, put differently, the look of the object. We can learn to perceive the characteristic look of the object. And we ultimately can learn to perceive the characteristic look of a kind of object, for instance a tree. It obviously is the case, and Aristotle obviously assumes, that animals can perceptually discriminate particular objects and kinds of objects, for instance by their characteristic look. But, obviously having the look of a tree or the look of a lion is not the same thing as being a tree or being a lion. We do not even have to assume that looking like a lion always has to coincide with being a lion. Animals still would be

able to discriminate lions by their look to the extent that looking like a lion and being a lion do coincide. But even when they coincide it is one thing to look like a lion and another to be a lion. And the claim is that animals can discriminate lions by perceptually discriminating their look, something perceptible, whereas human beings can discriminate lions by intellectually discriminating whatever it is such that being that is to be a lion, something imperceptible and only accessible to reason and intellect, hence intelligible as opposed to perceptible.

It may help to get clearer about what Aristotle has in mind when he talks about the discrimination of an intelligible feature, if we look at the chapter with which Aristotle introduces the *Metaphysics*. The point of *Metaphysics* A.1 is that human beings naturally find knowledge desirable, but that there are higher and lower, and hence more and less desirable forms of cognition, the lower ones giving rise to the higher ones, and that the highest, and hence most desirable, form of cognition is wisdom, the grasp of the ultimate principles of reality in terms of which we have a general understanding of reality. In the course of this discussion Aristotle tries to pinpoint the precise place at which we cross the divide between lower forms of cognition and higher forms of cognition, in which we move from what might be called experiential knowledge to knowledge properly speaking, the knowledge which characterizes somebody who has mastered a true art (*τέχνη*) or science (*ἐπιστήμη*). This point is precisely the point where we discriminate a crucial intelligible feature, i.e. the point at which the intellect and thinking comes in.

But Aristotle takes some time to get to this point, as he begins with the lowest forms of cognitive discrimination, perception, to pass in review how we can observe in nature that animals and human beings, on the basis of perception, display ever more complex cognitive capacities till we come to the experience of human beings which can be cognitively so powerful that, for instance, somebody experienced in matters of health, for all practical purposes, knows as well as the most learned doctor what to do to remedy the affections of his patients. What is also of particular interest in this account is that Aristotle finds it important to refer to the cognitive abilities of animals, and that, at least in this account Aristotle presents things in such a way, as if we could get amazingly far without reason and thought, with just those abilities which at least some animals share with us to some degree.

Aristotle begins by pointing out that we like to perceive things, even if this does not serve any immediate practical purpose, because we like cognition of things as such. We in particular like visual perception, because

visual perception is discriminating of which things differ from other senses to our cognitive constructed in such a way as from which our experience perception with all animals. is concerned, between animals do not; that is to say some have perceptions. And those living also have sense (*φρόνησις*). If senses and memory of what is heard, are even capable of learning is only rather limited, since through memory what they human beings are able to do so rich that one might mistake does not by itself constitute learning.

This Aristotle tries to explain understand the example we insists in this passage, thinks of a genuinely universal truth explanation for what one knows understanding of what one the experience that Socrates to this treatment; one also has this disease responded positively cases. So one has the experience suffered from this disease because that in all these cases a patient obviously does not constitute universal truth known, and were cured in this way. But and real knowledge will come further detail of the example describe what in a case like this. He presupposes that only perception satisfy a further condition: suppose that the experience. Indeed, we have to suppose

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e like to perceive things, even tical purpose, because we like like visual perception, because

visual perception is discriminative of a large number of features in virtue of which things differ from each other and hence contributes more than other senses to our cognition of things. Hence, the suggestion is, we are constructed in such a way as to naturally dispose of a large and varied basis from which our experience and our knowledge can emerge. But we share perception with all animals. Now the crucial difference, as far as cognition is concerned, between animals is that some also have memory and some do not; that is to say some have the ability to somehow store and process perceptions. And those living beings which have memory, because of this, also have sense (*φρόνησις*). Indeed, those animals which have not only some senses and memory of what they have perceived, but specifically the sense of hearing, are even capable of learning. But the *φρόνησις* animals can develop is only rather limited, since the experience animals can develop by retaining through memory what they have perceived is rather limited. By contrast, human beings are able to develop a very rich experience. This experience is so rich that one might mistake it for art (*τέχνη*) or knowledge (*ἐπιστήμη*). It does not by itself constitute knowledge, but it does give rise to knowledge.

This Aristotle tries to explain by considering the following example. To understand the example we have to keep in mind that Aristotle, as he also insists in this passage, thinks that knowledge, properly speaking, is knowledge of a genuinely universal truth (981^a15–24) and involves the knowledge of the explanation for what one knows to be true, that is to say it involves also the understanding of what one knows. The example, then, is this: one has had the experience that Socrates suffering from this disease responded positively to this treatment; one also has had the experience that Callias suffering from this disease responded positively to this treatment, and so forth for many cases. So one has the experience that in all these cases somebody who has suffered from this disease benefited from this treatment. Now remembering that in all these cases a patient with this complaint was cured in this way obviously does not constitute knowledge, properly speaking. There is no universal truth known, and we have no understanding of why these patients were cured in this way. But the crucial difference between mere experience and real knowledge will come out more clearly, if, in addition we consider a further detail of the example which Aristotle presupposes when turning to describe what in a case like this would constitute real knowledge (981^a10–12). He presupposes that only patients who, in addition to having this disease, satisfy a further condition are benefited by this treatment. Hence we may suppose that the experienced person has a more differentiated experience. Indeed, we have to suppose this, if the example is to bear out Aristotle's

claim that for all practical purposes the experienced person will do as well as the knowledgeable person. For, if it is known that not all patients respond positively to this treatment, the experience that all these patients (Socrates, Callias, etc.) have responded positively will not suffice to decide how to treat the next patient with this disease. So let us assume that the experienced person also can say that in his experience all patients which, apart from this disease, also displayed certain further observable features, for instance a certain colouring of their complexion, benefited from this treatment. The experienced person even can say that in his experience all persons with this ailment benefit, if they have this complexion. This will help to decide how to treat the next patient with this ailment. But it still will be the case that the experienced person has not gained cognition of a truly universal fact, nor does he have understanding of why things should be so. It is at this point that reason and thinking come in to move us beyond mere experience. We have to grasp, as Aristotle puts it, the universal (981^a16; 21) or the form (981^a10) which all those patients who benefit share and of which the colouring of their complexion or whatever perceptual feature differentiates them, is just a symptom, for instance their being phlegmatic or bilious or having a certain kind of fever. It is only then that we will begin to understand that people of this condition, when suffering this ailment, cannot but benefit from this treatment. Discriminating, discerning, or grasping this universal, being phlegmatic or being bilious, puts us into a position to grasp a truly universal fact and its explanation, because we can see the relations between the various universal features involved. We will get even clearer about the line of demarcation between reason and mere experience, if we describe the case of a person who just relies on experience more precisely (as we are perhaps supposed to by Aristotle, when he refers to 'this' (τὴνδὲ) disease and 'this' (τοῦτ') treatment. So let us suppose that all that the experienced person goes by is a set of observable symptoms when he talks about this disease and a set of observable features by means of which he identifies, say, the drug administered. If he acts purely on the basis of experience, he has no idea, as we might say, of what the pathological condition really consists in, nor of what the relevant feature of the drug consists in. He just knows from experience that in such-and-such cases the drug works.

Now, it surely is no accident that Aristotle is using a medical example. For long before Aristotle there had been doctors, as we can tell from the Hippocratic *De Prisca Medicina*, who claimed that the art of medicine is a matter of mere experience and should not be confounded by physiological speculation. And not long after Aristotle a school of thought in medicine

arose, the Empiricists, accord experience, and who explicitl medicine for reason, thought

This at first might seem doctor who is an orthodox i this: 'I have seen patients with such a treatment helped; so t patient.' But the claim is that impressions (φαντασίαι) a pe upon encountering a patient i of similar cases in the past e present difficulty. All we need of impressions is the ability t perceptual impressions in m impressions, based on memor impressions like 'I have seen t of it by doing so-and-so,' so t

I take it that Aristotle in contribution of thinking, is a of what experience can do. I has to say about animals app say that animals cannot thir cannot have a string of imp certain quality', 'it is about ti attributing to animals when l (980^b26) that they live by th is not denying to animals t the empiricist doctor engag no difficulty whatsoever to ingenuity in getting hold of a the power of memory and th Aristotle is claiming is that t does not yet in itself give yc to say (*De Anima* III.10 433^a a sort of thought (ὡς νόησι of animals are thoughts. An involve an exercise of the abi respond in a differential an features, but they cannot re

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arose, the Empiricists, according to whom the good doctor relies entirely on experience, and who explicitly denied that there was any legitimate place in medicine for reason, thought, or inference.

This at first might seem difficult to understand. For surely even the doctor who is an orthodox empiricist will allow himself such thoughts as this: 'I have seen patients with this condition before; in their cases such-and-such a treatment helped; so this treatment also might help in the case of this patient.' But the claim is that this is not a bit of thinking. This is a string of impressions (φαντασάι) a person with a certain kind of experience will have upon encountering a patient in this condition. It is a matter of being reminded of similar cases in the past and one's memory suggesting a way out of the present difficulty. All we need to appeal to in order to understand this train of impressions is the ability to perceive, the ability to store and process our perceptual impressions in memory, and the capacity of memory to produce impressions, based on memory, occasioned by present perception, for instance impressions like 'I have seen this before,' 'this was pretty frightening,' 'I got out of it by doing so-and-so,' 'so the thing to do is so-and-so.'

I take it that Aristotle in this passage, in order to bring out the distinctive contribution of thinking, is appealing to such a conception of experience and of what experience can do. If we look at matters in this way what Aristotle has to say about animals appears in an entirely different light. Aristotle does say that animals cannot think. But by this he does not mean that animals cannot have a string of impressions like 'it is pretty cold,' 'the light has a certain quality,' 'it is about time to fly south'. In fact this is what Aristotle is attributing to animals when he attributes sense (φρόνησις) to them and says (980^b26) that they live by their impressions and their memories. Aristotle is not denying to animals the bit of what we might call 'thinking' which the empiricist doctor engages in, because they cannot think. Aristotle has no difficulty whatsoever to accept that animals can display extraordinary ingenuity in getting hold of a banana. What Aristotle is denying to animals is the power of memory and the rich experience human beings have. And what Aristotle is claiming is that this sort of memory and this sort of experience does not yet in itself give you the ability to think. What Aristotle is willing to say (*De Anima* III.10 433^a10–12) is that one might think of impression as a sort of thought (ὡς νόησιν τινα), but he is denying that the impressions of animals are thoughts. And they fail to be thoughts because they do not involve an exercise of the ability to grasp a universal. Animals do cognitively respond in a differential and perhaps highly complex way to phenomenal features, but they cannot respond cognitively to intelligible features. They

cannot, as we can, discriminate the biliousness of those patients who suffering this disease will benefit from this treatment.

The next question then is how do we manage to discriminate such features and thus to have thoughts, as opposed to mere impressions. Here the most important text in the Aristotelian corpus perhaps is the final chapter of the *Posterior Analytics*, II.19, which in various ways is the closest parallel to *Metaphysics* A.1. What is at issue in this important chapter is how we manage to know the first principles of sciences. We had been arguing up to this point that to know, properly speaking, to know scientifically, is to know an immediate truth, i.e. an axiom, or to know by deduction from axioms a theorem. We had said a lot about what such proofs have to look like. But we now, understandably, want to know how we manage to know the axioms.

Aristotle's answer in short is that there is a disposition of the soul such that being in this disposition is to have the right conception or the right concepts of the items which make up a certain domain, and of the features in terms of which we will describe and explain the items in this domain. We will in particular have the right concepts of the basic items which are constitutive of the domain, for instance in the case of geometry, of points and lines. To say that we have the right concepts is to say that we have a grasp on the nature of the items or features falling under these concepts, that for instance we have a grasp on what a point or a line is. Thus having these concepts also is to have the basic knowledge about the domain which these concepts, beings correct or true to the nature of the things they are concepts of, encapsulate. And so having these concepts and thus having this knowledge will enable us to grasp the axioms.

Now, if we have the correct concept of a line and thus know what a line is, it is not surprising if we can discriminate or discern something's being a line. More generally, if we are in this privileged disposition of having the right concepts concerning a domain, we can discriminate or discern the intelligible features in terms of which the items in this domain are to be understood. To avoid confusion it may be emphasized that the idea is not that we have some concept or other of a human being according to which something, in order to be a human being, has to satisfy certain conditions, and that if we encounter something which satisfies these conditions we recognize it as a human being. The idea rather is that to be a human being is to satisfy certain conditions, that we can grasp what these conditions are and that, in doing so, we come to have the right concept of a human being.

The question then is how we come to have this privileged disposition of the soul. And here Aristotle assumes that there is a natural development

which begins with our being perceptual features and can intelligible universals. The is familiar with from *Metaphysics*, experience, the cognitive ability. But *Analytica Posteriora* II.19.

One important new development in this privileged disposition is not only acquire in the course of not develop this disposition of things, unless we already have some cognitive ability which capacity. He identifies this as perceive. Now in the course that at some point we come

So Aristotle, against Plato, Reason only arises in the course from perception. In fact, given he mentions the emergence that Aristotle identifies reason in which we have all the right truth of the axioms. For, ultimately from perception once we have reason, we can to explain all over again in perception, we can come to axioms.

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which begins with our being thus disposed as to be able to discriminate perceptual features and culminates in our ability to discriminate these intelligible universals. The story of this development is one we are largely familiar with from *Metaphysics* A.1 referring to perception, memory, and experience, the cognitive abilities of animals and their cognitive limitations. But *Analytica Posteriora* II.19 adds some important further details.

One important new detail is this. Aristotle insists, against Plato, that this privileged disposition is not one with which we are born, but one which we only acquire in the course of a development. He also insists that we could not develop this disposition in which we have knowledge, properly speaking, of things, unless we already have some cognition to begin with, and hence some cognitive ability which could develop into this high-powered cognitive capacity. He identifies this cognitive ability we start out from as the ability to perceive. Now in the course of describing this development Aristotle explains that at some point we come to have reason (*λόγος*, 100^a2).

So Aristotle, against Plato, is denying that we are born with reason. Reason only arises in the course of the cognitive development beginning from perception. In fact, given the place in Aristotle's discussion at which he mentions the emergence of reason, one is very much tempted to assume that Aristotle identifies reason with this high-powered cognitive disposition in which we have all the right concepts and hence can grasp the immediate truth of the axioms. For, having mentioned the emergence of reason ultimately from perception, Aristotle, instead of continuing to explain how, once we have reason, we can come to know the axioms, returns to perception to explain all over again in somewhat different terms how, on the basis of perception, we can come to be in this privileged state in which we know the axioms.

On the other hand, this seems to be an enormously strong assumption. For it amounts to the claim that we can only think once we have got all the concepts in terms of which one will know and understand really right. And this does not leave any room for the assumption that thinking must already be involved in reaching the state in which we have a grasp of the principles or axioms governing a domain, because we have a grasp of the basic items or features constitutive of this domain.

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