

How Best to Read Aristotle on Essences

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Introduction

As a consequence of the desire to refer to objects across possible worlds, in order to provide a semantic interpretation for various systems of modal logic, there has, in recent years, been a revival of interest in what is referred to as 'Aristotelian essentialism'. The simple thought is that if it is possible that some object might have properties it does not currently possess, then the possession of such properties might so drastically change the character of the object that what is known as 'Aristotle' in the actual world could be more like a poached egg in some other remotely possible world. Such a possibility seems intuitively absurd, and would cripple the process of reference needed in modal reasoning, so we need a way of asserting when a possible Aristotle retains a fundamental identity with 'our' Aristotle. Without such an account, modal logic may have to face the brutal rejection expounded by Quine. Hence it is suggested that the point at which a diverging Aristotle is no longer acceptable as our Aristotle is the point at which he has lost his essential properties. These might consist of humanity, perhaps rationality, and perhaps being born of particular parents, or somehow fixed in fourth century BCE Greece. They probably don't consist of teaching Alexander the Great, or founding the school at the Lyceum.

This development in modal logic has roused the rather somnolent and peripheral world of Aristotelian scholarship, and there has been dramatic progress in our understanding of the extensive ramifications and possibilities that derive from Aristotle's actual account of *ousia* ('primary being' or 'substance'¹), notably in 'Categories', 'Topics', 'Posterior Analytics' and 'Metaphysics'. The main views on the subject explored by Aristotle are²:

1. That the essence is a 'fundamental subject of predication' [*to hupokeimenon*], which implies an entity which has no properties in itself, but is the bearer of the other varying properties of the object; the sole role of such an essence would be to remain the same through a process of change.
2. That the essence is a collection of platonic universals which are united by being exemplified in individual bundles which constitute objects.
3. That each particular has a primary being unique to that individual, which is little more than bare identity, and a secondary being, which is the location of the essence, consisting of the properties shared across the natural kinds to which the entity belongs, so that this natural kind defines the category into which the thing falls.
4. That essence is to be found in definition, because only primary substance [*prote ousia*] is capable of definition, and the contents of the definition gives us the essence of what the thing is, and ensure its identity in contexts of change and possibility. In this view, the essence is often identified with those

¹ The following Greek terms are central to this essay, and are usually given in parenthesis, because it is important to focus on what Aristotle actually said, and avoid misleading translations. *Ousia* is a cognate of the verb 'to be', and literally means 'being' or 'reality of' (Bostock); it is used loosely by Aristotle, and sometimes stands for *prote ousia*, which means 'primary being', which is a concept well caught by our word 'substance'; hence *ousia* should be translated sometimes as 'being' and sometimes as 'substance'; unfortunately, but understandably, the Romans translated *ousia* as 'essentia', and this leads to the very confusing translation of *ousia* as 'essence'; the crucial point is that essence is a *theory* about the nature of *ousia*, and is certainly not what the word means (see Politis on this). *To ti en einai* literally means 'what it is to be that thing', and is Aristotle's strongest term for the heart of his enquiry, translated as 'essence'; *to ti en einai* is often qualified by the phrase *kath' hauto*, which translates as 'in itself' or as the Roman translation 'per se'. *Tode ti* has the literal meaning of 'a this-such', and is what we would now express by saying that an entity 'has identity', with no further explanation of what constitutes that identity. *To hupokeimenon* literally means 'that which lies under', and was translated by the Romans as 'substantia'; it is most clearly summarised by Aristotle as what remains when the attributes are stripped away, so it is best translated as 'the ultimate subject of predication' (and not as 'substance', which is a much richer concept). *Aitia* translates as both 'cause' and 'explanation'. *Episteme* is best translated, in this context, as 'scientific knowledge', which results from demonstration. There are many other interesting translation issues, but those are the important ones for the present discussion. An example of the dangers is offered by Brody (1980:146), who quotes PA74b6 as "attributes attaching *essentially* to their subjects attach necessarily to them", in support of his view that essential attributes are those which are necessary over time – but the Greek behind his 'essentially' turns out to be *kath' hauto*, which simply means *per se* or 'in itself', and only concerns mere identity, not essence (as Barnes's translation confirms)

² At Met 1028b32- he identifies *four* theories of substance which require investigation: what it is, the universal, the genus, and the subject. My characterisation divides 'what it is' into two parts, 4 and 5, the definition, and the intrinsic nature, though one might say that these two are inseparable. My motive is that the division is reflected in Aristotle's discussions, but it also relates to the two sides of the modern debate, identity in modal contexts, and scientific necessity.

properties which are held to be necessary if the object is to remain the things which it is, since these are the properties likely to be mentioned in the definition.

5. That the essence is some fundamental part of an entity's being, mainly causal in nature, which explains the entity's existence, identity, definition, powers, properties, behaviour, relations, and categories.

The **first** view is one espoused in 'Categories', where he distinguishes between 'primary' and 'secondary' being, equating the secondary being with the category into which something falls, and the primary being with the 'underlying thing' [*to hupokeimenon*], but this distinction fails to appear in the books of the 'Metaphysics'. In recent times, though, the view that essence is no more than the 'underlying thing' has had defenders. Robert Adams, Graeme Forbes and Penelope Mackie all defend some version of minimalist essence, either in its 'bare particular' form (that some propertyless substratum underpins each entity), or in the 'haecceity' form (that each object has a property which merely endows it with identity).

The **second** view is repeatedly rejected in Aristotle, and his denial of the separate self-sufficient forms, which can exist even if not instantiated, seems to be a central motivation for Aristotle's whole philosophical system, in reaction to the famous views of his great teacher. Modern platonists will, of course, be more sympathetic to this second view, but the whole notion of an 'essence' within a physical object does not sit well with the view that true reality exists on a quite different plane.

The **third** view is the one which places the emphasis on the 'secondary being' in 'Categories'. David Wiggin has preferred the account of essence given in 'Categories' (rejecting entirely the hylomorphic account in the later books of 'Metaphysics'), and sees the important aspect of essence in the 'secondary substance' – the category into which the thing falls. This approach, known as 'sortal essentialism', has led to the widespread assumption that in 'Metaphysics' Aristotle abandoned belief in individual essences, in favour of the view that essence is something shared between entities of the same kind, expressed through definitions which always employ universals, in the way that humanity is shared by humans. The incipient platonism which then threatens is avoided by saying that the humanity is always instantiated, and has no independent existence. However, Michael Wedin makes a persuasive case for reassessing this view, and he suggests that Aristotle never lost his commitment to individual essences, but wrote 'Metaphysics' in order to give an account of how the 'Categories' sketch can become a full theory (by developing the notion of an individual entity's 'form'). This leaves open the possibility that Aristotle was committed to individual essences, and we will make use of Wedin's exposition. That Aristotle retained a commitment to individual essences is also argued by Catherine Witt, who says that for Aristotle the essence should be understood as whatever causes something to exist as that thing, rather than as whatever places the thing in a category. We will utilise Witt's reading, along the Wedin's, to argue that individual essences precede categorising features, and that the 'sortal' view has things the wrong way around.

The **fourth** view (focusing on definition) is also held by many to be Aristotle's final answer to the question of essence, and it is endorsed in traditional Thomist terms by David Oderberg, and is employed by Kit Fine in the account he has been developing in order to meet the needs of modern modal logic. There is no doubt that Aristotle homes in on definition in the later books of 'Metaphysics', and gives it a key role in his account. However, we will argue here that the fifth view places the definitional account in a wider perspective, and that the fifth view is the one to be preferred, both as a likely account of what Aristotle had in mind (though we must defer to the Aristotle specialists on that), and, above all, as the best account of essence, which will play an appropriate role in the underpinnings of modal logic, and in the metaphysics that philosophy discerns within the physical sciences, and even as a fruitful way to understand abstract 'objects' such as numbers.

This **fifth** view of Aristotle is given priority by those modern scholars, such as Vasilis Politis and David Charles, who see the 'Posterior Analytics' as a vital part of the jigsaw. In that text Aristotle gives an account of 'understanding' and 'demonstration', and that analysis is taken to be the motivation for Aristotle's ultimate and primary metaphysical project, the link being evident in the famous first sentence of 'Metaphysics Alpha' – 'By nature, all men long to understand' (Annas prefers 'understand' to the more familiar 'know'). Placed in that context, Aristotle's theory of essence is to be seen as his key to unlocking for us a way to understand the world. Both Wedin and Witt endorse the importance of Aristotle's quest for explanation, and the present essay explores how this fifth view can be firmed up as the most satisfactory account of Aristotelian essentialism. Rather than adopting the normal approach, of reading the 'Metaphysics' in the light of a supposed rejection or development of the 'Categories' or the 'Topics', we will only understand Aristotle's line of discussion if we start from the account of demonstration in 'Posterior Analytics'. We might summarise the proposal by saying that demonstration seeks the deepest level of explanation which is available to us, and that essences are to be identified with what is found at this deepest explanatory level. Such explanatory essences are always characterised by causal power (at least in the physical world³), and must be located at the level of the individual rather than of the sortal category, though

³ The interesting question of whether treating essences as explanatory can throw light on *abstracta* as well as on physical objects will be saved for a later date. At PA 87a36, he interestingly observes, in the context of a discussion of arithmetic and geometry, that "a unit is a positionless substance [*ousia*] and a point a substance having a position".

the latter is fully admissible insofar as it adds to our capacity to give broad and economical explanations. A similar approach can be brought to an entity's origin (that the origin may be essential, but only if it is explanatory), and to its intrinsic identity (that a necessary prerequisite for understanding and explaining an entity is that its identity be properly grasped), and to the matter of which it is made.

So to explore the picture of Aristotelian metaphysics which emphasises the explanatory role of essence, we must start from the account of understanding given in 'Posterior Analytics', rather than with his account of how to categorise things, in 'Categories' and 'Topics'. If we identify the overarching aim of Aristotle's whole philosophical project, we see that the quest for understanding leads to an account of explanation, which then leads to an analysis of demonstration, which then homes in on the importance of definition, and that it is the need for good definition which gives rise to the theory of essences. Much of his subsequent discussion consists of a cautious attempt to pin down what would count as an essence, and he finally launches into a bold and controversial theory, that 'form' [*eidōs*, supplemented by *morphe*, meaning 'shape'] can be purloined from Plato's grand account, and put to humbler but more precise use as the foundation of scientific explanation.

His starting point

The first step in Aristotle's long enquiry is when he tells us that 'all men began to philosophize from wonder' (Met 938a), and that 'by nature, all men long to understand' (Met 980a). The first thing to be encountered, though, in the quest for understanding are puzzles (*aporiai*), and in Book β he catalogues fifteen puzzles which immediately confront the aspiring metaphysician. Of these, the following five seem to be of most interest, or at least they will most concern us here:

1. Are the causes of things universals, or particulars? (1003a05-17, *aporia* 15)
2. Are ultimate causes potentialities, or must they be actual? (1002b32-1003a05, *aporia* 14)
3. Is there one science of explanation, or many? (996a18-b26, *aporia* 1)
4. Are the basic principles of a thing its kinds, or its components? (998a20-b13, *aporia* 6)
5. Are there any general kinds, or are there merely particulars? (999a24-b24, *aporia* 8)

Engaging with these puzzles, and pursuing his dream of achieving understanding, leads him from the superficial and external characteristics of things to a desire for what is more intrinsic and basic, as when he says that 'when we know what a man is ..we reckon that we know the particular item in the fullest sense, rather than when we merely know its quality, quantity or location' (Met 1028a). His quest is nicely constrained by what is humanly possible, as when he remarks that 'The things we seek are equal in number to those we understand', and he follows this up by listing the four things we are capable of understanding: 'the fact, the reason why, if something is, what something is.' (PA 89b) The main aim then becomes the second and fourth items on the list, knowing exactly what a thing is, and the reason why it is what it is. This is focused by asking the true definition of the Greek word *ousia*, which is a cognate of the verb 'to be', and its initial meaning is something like the 'existence' or 'being' or 'reality' of a thing. In order to distinguish questions about 'quality, quantity or location' from questions about knowing the item 'in the fullest sense', he focuses on 'primary being' (*prote ousia*; sometimes his use of plain *ousia* has this narrower sense, and the translation as 'substance' seems appropriate, as when we talk about the 'real substance' of a document).

Explanation

The way to achieve the desired understanding is to give a successful explanation (PA 71b30; Phys184a12). At its simplest, his account of explanation is caught in the observation that we can all use our senses, but the wise man is "more capable of teaching the causes [*aition*]".(982a12). A key to understanding what Aristotle is aiming at is to grasp the word *aitia*. There has been a somewhat ossified tradition of translating this as 'cause', but the result has been the bewilderment of generations of students who were informed that Aristotle outlined four different types in cause (notably in his 'Physics' II.3), when we more sensibly use the word 'cause' univocally, to mean something like Aristotle's 'efficient' cause. This translation has, however, been insensitive to the fluctuations of Aristotle's discussion, and the word *aitia* is standardly used in Greek to mean 'explanation', as often as it is used to mean 'cause' (as Urmson 1990 confirms) The fact that he is using the one word for both meanings shows us very directly that he largely thinks that to give an explanation *is* to give the cause. That Aristotle is giving four modes of *explanation* immediately makes his account more plausible and sympathetic to the modern student, since we all understand that different types of explanation are often appropriate in response to different questions, and in different contexts (e.g. the scientific, the legal, the everyday, or the metaphysical). So Aristotle offers us explanations in terms of the matter constituting a thing (the marble), in terms of the forces which create something (the sculptor), in terms of the 'form [*eidōs*]' which gives identity to the matter (the structure of the statue), and in terms of the purpose (the statue's beauty, or role in a setting).

However, from among the modes of explanation identified by Aristotle, the ones that interest him are those that lead to *episteme* (usually translated as 'knowledge', but more perspicuously here as 'demonstrative science'). At 'Posterior Analytics' 76b14 he tells us that demonstrative science aims at three things: what is posited to exist, in terms of its kind; the primitives that found any demonstration; and the attributes of things. We might be tempted to think of these three as the 'domain', the 'connectives' and 'operators', and the 'predicates' of modern predicate logic, but Aristotle is maintaining a distinction between 'deduction' (which would suit the modern reading) and

'demonstration'. A demonstration aspires to the precision of a deduction, but the big difference is that demonstrations produce understanding, which is not a requirement for a valid deduction. Successful demonstrations should, above all, enlighten us about hidden causes, and about necessities. The explanation is also found in the 'middle term' of a deduction, which is (roughly) the property which connects an individual to its kind (as Socrates is endowed with mortality by his humanity) (PA90a6).

Demonstration

To identify the mode of thought which will give us the explanation needed for understanding, Aristotle is always keen to emphasise the difference between 'deduction' and 'demonstration'. In modern thought we routinely discuss science in terms of induction, explanation and evidence, but rarely in terms of demonstration. Aristotle's word is *apodeixis*, which we standardly translate as 'proof' in mathematical contexts, and it carries that sense over into the establishing of truths about the physical world. Since we became mesmerised by Hume's scepticism about induction, the idea that you could actually 'prove' something about the physical world is out of fashion, despite the fact that we are perfectly happy with the idea of conclusive physical proof in forensic contexts. This seems to be because, unlike many philosophers, most modern people are robustly realist about the physical world, and robustly confident about the deliverances of our normal perceptions of it. Aristotle is certainly a robust realist, and has little time for simple doubts about perception (e.g. Met 1063a6, where he mocks sceptics who say there are two realities if you go cross-eyed).

His account of demonstration is most clearly laid out in the early books of 'Posterior Analytics', and the key point is that "by demonstration I mean a scientific deduction; and by scientific I mean a deduction by possessing which we understand something" (71b19). This is qualified by the existence of a further type of understanding, through knowledge of principles, which are not demonstrable (72b16-20). Among the principles, it appears, are those on which demonstration must be founded, which are "items which are true and primitive and immediate and more familiar than and prior to and explanatory of the conclusions" (71b21). This view that indemonstrable principles have priority places Aristotle closer to modern rationalists like Bonjour, than to empiricism. Later he distinguishes between "universal demonstrations" which are "objects of thought", and "particular demonstrations" which "terminate in perception" (86a30); the former of these are said to be superior, and seem to be generalised truths, and the latter seem best classed as predictions. Aristotle also has the modern taste for simplicity in his demonstrations, but (unlike the moderns) he gives a reason for his preference, which is that "knowledge will come about more quickly this way" (86a35). He is not motivated by some abstract taste for desert landscapes, but by an urgent desire to understand. Having told us that demonstrations are concerned with three things (what is posited to exist, the axioms, and the attributes), the last step in his account of demonstration is to actually offer us an intellectual procedure:

When you are dealing with some whole, you should divide the kind into what is atomic in form, i.e. into the primitives (e.g. number into triplet and pair). Then you should try to get definitions of these items (e.g. of straight line and circle and right angle). After this, having got what the kind is (e.g. whether it is quantity or quality), you should study its proper attributes through the primitive common items. For the characteristics of the items compounded from the atoms will be plain from the definitions, because definitions and what is simple are principles of everything, and it is of the simples alone that the characteristics hold in themselves – they hold of the other items in virtue of the simples themselves. (96b15-25)

This is the culminating passage in Aristotle's account of demonstration, and it leads us closer to the role of essences by giving a pivotal role to definitions. The approach which Aristotle is recommending has many parallels with discussions of the same issues in the writings of Descartes, Russell and Quine, in their desire to locate what is atomic, and then build our theories using reliable principles. The procedure of demonstration is quite separate from the procedure of definition, because "definitions are of what something is, i.e. of its essence, but all demonstrations clearly suppose and assume what a thing is" (PA 90b31).

Definitions

His firmest statements about definitions are that they "must be of something primary" (Met 1030a7), that "only substance [*ousias*] admits of definition" (1031a1), and that "the definition is the account [*logos*] of the essence [*to ti en eina*]" (1031a13). The main topic of the 'Metaphysic' (to the extent that this collection of books has a unified aim) is precisely to establish what *is* primary, that is, to establish the nature of *prote ousia* (primary substance/being) (Met 1029a1), and then to define it. The epistemological need for definitions is what drives his ontological enquiry. When he makes his grand statement that "the fundamental duty of the philosopher .. is to gain possession of the principles and causes [*aitias*] of substances [*ousion*]" (Met 1003b19), we should pay most attention to the desire for 'causes'. There is no point in a mere lexicographical definition of primary substance if explanations about the how the world works do not flow from it.

But when we ask the enticing next question ('so what precisely *is* Aristotle's primary being?'), we encounter complex difficulties of interpretation in what had been a fairly simple story. The account of primary being within 'Metaphysics' shifts between books, and the 'Categories' (often said, with little evidence, to be 'earlier') seems to offer a quite different theory. We must either embrace the view that primary being (in the physical world) is that which is given its identity and nature by the unifying imposition of 'form' (*eidōs/morphe*) on 'matter' (*hulē*), or we

must backpeddle, and look for primary being simply in the 'ultimate subject of predication' (*to hupokeimenon*), or in the kinds and categories identified in the 'earlier' work.

We can edge towards a plausible view on this question by clarifying what exactly is meant by definition (*hurismos*), if we take that to be the chief motivation of his enquiry. Modern writings on essentialism seem to treat Aristotle's interest in definition as arising simply from his interest in essences, and his proposal that definitions are what reveal them, but it seems more plausible (taking this broader view of Aristotle's work) that it is the desire for definition which comes first, and that the theory of essences is what results from the pressure to achieve powerful definitions which can play an explanatory role in the quest for understanding. It is not that the theory of essences requires definitions, but that the theory of definitions requires essences. "Essence [*to ti en eina*] belongs to all things the account [*logos*] of which is a definition" (Met 1030a7); "the essence is, for each thing, what it is taken to be *per se*" (1029b15). There is, after all, some hundred years between Socrates' identification of definitions as central to philosophical enquiry, and Aristotle's identification of essences as the possible terminus of the enquiry.

In the traditional account of Aristotle, it is claimed that his definitions simply consist of identifying genus and differentiae (that is, by placing an entity within a kind, and then individuating it within that kind by individual characteristics), but Book Z.12 gives a rather different account. He begins his discussion by saying that "it makes sense to look first at definitions by division" (1037b32), but after a page of discussion he concludes that "the definition is the account derived from the differentiae, and from the last of these under a correct procedure of division" (1038a30). In other words, definition by genus and differentiae is *not* the correct way to define, but is part of the procedure for arriving at the definition. The actual definition arrives with the final stage of analysis, which is that of the finest grained differentiae (and certainly not, as some writers seem to think, by simply placing the entity within a category). This is precisely the procedure which was described at PA 96b15-25, quoted in full above. He also talks of an 'isomorphism' in a good definition, between the component parts of the definition and the components of the actual thing being defined (Met 1034b20), which implies getting to grips with the details of the differentiae. The view that definition merely requires a statement of genus and differentiae derives from the account in 'Categories', where these are referred to as 'secondary substance/being' (2a14), but that concept never appears in 'Metaphysics'. The two scholarly accounts of this are that he simply changed his views after 'Categories', or that (according to Wedin, for example) the 'Metaphysics' is an exploration of the thesis first proposed in the earlier work. According to the latter view, he identifies 'primary being' in the earlier work, located in the 'thisness' of the individual, and not in the 'suchness' of the genus ("as regards the primary substances ..each of them signifies a certain 'this' [*tode ti*], for the thing revealed is individual and numerically one", 3b11), and then writes the lengthy later work to explore what it is that bestows thisness on each individual thing.

The hallmarks of thisness [*tode ti*] turn out to be identity⁴, unity and a capacity for definition, and the proffered explanation of these three phenomena is 'form', which is at the heart of what-it-is-to-be [*to ti en eina*] a thing. A definition must mention matter as well as form (Met 1036b20), to avoid what we would now think of as the Cartesian geometrical view of objects, but the holy grail of Aristotelian metaphysics is a full understanding of exactly how he intended the words 'eidos' and 'morphé', because "by the form [*eidōs*] I mean the essence for each thing and its primary substance" (1032b1) In his summary of his final theory he has not lost sight of the causal explanations which had always been the aim of his enquiry: "the cause that is the object of enquiry is that by virtue of which the matter is in the state that it is in. And this cause is the form, and the form is the substance" (1041b10). His proposal in 'De Anima' that the mind [*psuché*] is the form, and hence the essence, of a man, shows that we are a long way from the English word 'form'. His other remaining major problem, perhaps the last on this particular intellectual journey, is how, if we locate the essence of something by defining its form, we can ensure the required unity of the primary substance which is being picked out (Met 1037b10).⁵

Universal Explanation

It may be felt that the account of definition in the previous paragraph neglects the role of universals. Indeed, Aristotle refers to "definition being of the universal and the form" (1036a28), and that "definitions are thought to be of what something is, and what something is is in every case universal" (PA 90b5), so it may seem that the above account has overemphasised the place of the individual in definition, when links with universals and genera seem to be the real target. The claim of the present essay is that it is a misunderstanding of the role of universals in Aristotelian definition which has misled modern thinkers into understanding Aristotelian essences as if they were classes or categories. In the fifteenth *aporia* in Book β, we remember, Aristotle encountered a puzzle about universals. On the one hand if the universals are entirely general then they seem not to be substances, which means that they cannot have the identity needed for genuine existence (1003a7), but on the other hand if they are particular then they will not be knowable because knowledge is always of generalities (1003a13). The key point here is that the difficulty is traced back to Aristotle's conception of knowledge, and that means *human* knowledge, or what we are actually capable of knowing, just as he had picked out the four things knowable for us at PA 89b24. We start from the fact that human knowledge simply consists of grasping generalities ("The point is that

⁴ "That which is means a thing with thisness" Met 1030b14

⁵ On hylomorphic unity see Gill 1989, which I have not yet read. Hylomorphism will be dealt with on another occasion.

reason grasps generalities, while the sense grasp particulars” - Ph 189a7). Once again, to understand his metaphysics, we must understand his epistemology.

What we seek is knowledge of the particulars and individuals, but our route to this knowledge is through generalities. Aristotle accepts the notion of a universal, which “is said to be universal just in virtue of the fact that its nature is to pertain to a plurality of things” (Met 1038b12). The ontological status of these Aristotelian universals is highly indeterminate, and plausible claims can be made that he is really not far from platonism, *and* that he is the first trope theorist, *and* that he is verging on Quinean eliminativism. The only certainty is that universals can only exist in relation to particulars, and that means in relation to substances (which is why they themselves are *not* substances). We don’t learn about these universals through some platonic dialectical a priori ascent into a higher realm, but by straightforward induction from the particulars which interest us (“it is from many particulars that the universal becomes plain” PA 88a5; “we must get to know the primitives by induction; for this is the way in which perception instils universals” PA 100b4). The aim, though, is always to get back to the particular, as he spells out at the opening of ‘Physics’: “we have to progress from the general to the particular ...because it is whole entities that are more intelligible to the senses, and anything general is a kind of whole” (184a21). Certainly there is no way that the universals themselves should be thought of as the sought-after primary being (1038b8, 1041a3).

Thus we find that universal explanations are the best (as he explicitly tells us at PA 85b27), but this is because of the nature of the human mind. Hence, if we seek an understanding of each particular, we must work from our capacities, and since definitions are couched in generalities, it is definitions which are the key to unlock the door for us. The generalities of a good definition will give us the universal attributes which coincide in each thing, but what we are really after is the ‘real’ definition, which is the underlying primary substance, which is the individual essence (the what-it-is-to-be-that-thing), because that is what not only ensures the existence and the identity of thing, but also *explains* the attributes. The further advantage of identifying the universal attributes (apart from leading us to the essence) is that these are shared with other entities, so our observation of the resultant patterns of behaviour and relations widens our understanding, and we can apply inductive thinking to the nature of many individual essences. Generalisation is what gets us from one particular to another particular, and it is the inductive process which enables us to pronounce on causes, and make predictions. Generalisation is both the strength and the weakness of human knowledge; we can see its power, but it blocks us from getting down to the final details, because “the elements will not be possible objects of knowledge, because they will not be universal, while knowledge is of the universal” (Met 1086b30). We might say that universal generalisation is the instrument through which we view the particulars of actuality.

The common element in the quest for understanding is *aition* (‘explanation’ or ‘cause’). He tells us that “wisdom is knowledge having to do with certain principles and causes [*aitias*]” (Met 982a2), and later we find that this knowledge must be of the “primary cause” (983a28; also Ph 194b18). The latter passage in ‘Metaphysics’ continues by giving an interesting gloss on the well-known account of the Four Causes or Explanations in ‘Physics’ II.3. The explanation normally known as ‘formal’, and exemplified by the structure and shape of a statue, is said to consist of “the substance [*ousian*] and the essence [*to ti en einaī*]” of the thing. The other three causes are the matter, the initiator, and the good aimed at. The last of these has a special status, but the explanation from essence or form comes closest to the primary cause which is needed for true wisdom. At PA 94a22 this ‘formal’ explanation is said to be simply “what it is to be something”. In other words, the well-known so-called Formal Cause should actually be understood as Explanation by Essence; this clarifies his example in ‘Physics’, that the harmonious octave in music is explained by its essential property of the numerical two-to-one ratio in the string of the instrument (Ph 194b28).

Witt draws attention to an important passage at the end of Book M that indicates the bridge between Aristotle’s general explanations and his ultimate aim, which is to explain particulars. There a distinction is made between ‘potential’ [*dunamis*] and ‘actual’ [*energeia*] knowledge (1087a16); potential knowledge is said to be “universal and indefinite”, and actual knowledge is said to be “of something definite, being the this-such [*tode ti*] of a this-such”. Aristotle concludes that book with uncertainty about which one is the true knowledge, but it seems to be a sort of uncertainty principle for knowledge – that gains in generality result in loss of precision, and vice versa. Since, though, actuality is ontologically prior to potentiality in Aristotle’s thought (“Aristotle undoubtedly considers *energeia* [actuality/activity] to be the central characteristic of the ultimate cause of change”, Politis 2005:281), we can take it that ‘definiteness’ is a hallmark of the best knowledge, and this concerns individuals. It is certainly evident that knowledge cannot merely exist in the world of generalities and universals, since the universal can never be separated from the particular (Met 1086b3).

Conclusion

In summary then, we arrive at a correct understanding of Aristotelian essence if we start from his epistemological ambitions. Understanding yearns for explanation, which is satisfied by demonstration, which rests on definition, which employs universals to grasp the particulars, and thereby converges on the essence. The essence, if it can be grasped, explains the existence, identity, powers, categorisation, relations, and perceptible attributes of each thing. If the modern sympathy for essences has a dual ambition, in explaining identity and in explaining necessary behaviour, then it seems as if these Aristotelian essences might do both jobs. They make the entity

what-it-is [*to ti en eina*], and thus designate it in modal contexts. Faced with the issue of how far our Aristotle can drift towards being a poached egg in some remotely possible world, we might answer that he will qualify as Aristotle if he retains, not the attributes which our Aristotle *had*, but the attributes which will *explain* the character of our Aristotle. If there is a possible ancient Athens containing a very sharp-witted fishmonger who came south from Stageira, but was rejected by the Academy and gave up reading, that man might explain our Aristotle in another possible world (the actual one). If it contains a fairly clever student at the Academy who is the son of a Stageira doctor, but lacks the DNA needed to explain genius, then this is not our man (though if he acquired the right DNA in a Martian laboratory, and was then parachuted into Stageira, that *is* our man).

That correctly represented Aristotelian essences suits scientific essentialism can be seen in Aristotle's remarks that "it is not possible for fire to be cold or snow black" (C 12b33), that "it would be strange for a natural scientist to know what the sun and the moon are, but to be completely ignorant about their necessary attributes" (Ph 193b28), and that "the nature of things is a certain principle and cause of change and stability in the thing, and it is directly present in it" (Ph 192b20). The identity of the sun, and the attributes of fire, are precisely what are picked out by a definitions of their primary substances, which specifies their essences, and then entails their necessary behaviours, and gives a causal explanation of their activities.

A challenge to this picture comes from the view that explanations come from laws of nature, and not from the intrinsic characters of objects. We cannot pursue that here, but the most promising line is Mumford's rejection of the laws of nature (2004), on the grounds that no decent account of them can be given as either internal to nature or external to nature. The 'laws of nature' are merely convenient ways to describe the regularities of behaviour which result from the active behaviour of interacting essences.

We might ask whether *all* explanations arise from essences, and that should probably be answered in the affirmative. Clearly an explanation might be primarily based on a quite accidental property, if we bumped into Aristotle in the gloom because he was wearing a black cloak. The enquirer should presumably ask *why* he is wearing a black cloak on that occasion, and we may surmise that all such enquiries will terminate in true essences.

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