PREDICATION AND ONTOLOGY IN ARISTOTLE'S *ORGANON*

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In the *Categories,* Aristotle recognizes two relations that an entity can bear to a subject: it can either *inhere in* or be *said-of* a subject. In this dissertation, I offer an interpretation of the natures of these relations and their relata. I also examine Aristotle's views about predication, the nature of truthmakers, and ontological priority.

At *Categories* 1a24-25, Aristotle offers a definition of inherence which, on the most natural reading, holds that a nonsubstance can inhere in a substance only if it cannot exist without that substance. An entity that inheres in a particular substance must be a nonsubstantial particular which is numerically distinct from any entity that inheres in a distinct substance. This reading of 1a24-25, however, is inconsistent with the most natural reading of Aristotle's claim 2a34ff that the universal color must inhere in a particular body. To render Aristotle's claims consistent, we must reinterpret either 1a24-25 or 2a34ff. In chapters 2-6, I show that various attempts to reinterpret these passages are not successful.

I argue that Aristotle's claims really are inconsistent. In chapters 7-10, I consider what might have led Aristotle to this inconsistency. I conclude that Aristotle's error results from a confusion about the nature of the said-of relation.

In chapter 7, I argue that Aristotle regards the said-of relation as a whole-part relation holding between universals and particulars, but is confused about whether the said-of relation is purely extensional. In chapter 8, I argue that the same confusion infects some of Aristotle's views about *kath' hauto* and *katholou* predication in the *De*

Interpretatione and *Analytics*. In chapter 9, I examine Aristotle's views about ontological priority relations between particulars and universals. I note that none of the types of priority defined in the *Categories* will secure Aristotle's view that particulars are prior to universals. I reconstruct a view with the desired result from Aristotle's discussion of one thing's being a "cause of being" for another. I conclude in chapter 10 that Aristotelian primary substances are prior to all other entities in that they alone are nonrelational entities.

BIOGRAPHICAL SKETCH

Keith McPartland was born in New York City in 1970. He graduated with a B.A. from Rutgers College in 1994. He received his Ph.D. in philosophy from Cornell University in 2009, and has been Assistant Professor of Philosophy at Williams College since 2007.

For my parents, Barbara and Jack McPartland.

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CHAPTER 1

THE *CATEGORIES* AND FUNDAMENTAL ONTOLOGY

In the *Categories,* Aristotle sets out to describe the fundamental logical

structure of the world. He points out that the true things we say about the world can be

thought of as the answers to various questions about objects. Imagine that yesterday

we saw a six-foot tall pale grammarian trying on shoes in the Agora and complaining

to his daughter about the blisters on his feet. In giving the rather complex description

above, I answer several potential questions about the man. I tell you what the object is,

a man; I tell you something quantitative, he was six feet tall; I tell you something

about the qualities of the man, grammatical and pale; I tell you something about the

relations that the man bore to other things, he was the father of a daughter; I tell you

where and when the man was; and so on. Aristotle claims that there are ten most

general kinds of question that we can ask, corresponding to which there are ten most

general kinds of term indicating ten most general kinds of entity—substance, quantity,

quality, relation, and so forth.

Aristotle also tells us that we make true or false statements about the world by

combining the terms for these entities. Aristotle often speaks about this combination of

terms as predication, and the word '*kategoria*' normally translated as 'category' might

be taken to mean something like 'predicate'.[1] We are accustomed to using the noun

'predicate' to denote a certain type of linguistic object. Corresponding to this use of

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[1]   For a fuller discussion of the right way to construe '*katêgoria*' see Michael Frede's
"Categories in Aristotle" (1981), and J.L.Ackrill's commentary on the *Categories and De
Interpretatione*. I agree with Ackrill that Aristotle primarily uses '*katêgorein*' to talk about a relation
between entities—one thing is predicated of another. There is no harm in allowing at this point that
Aristotle recognizes both a relation between words and a relation between entities, and that each of
these can be called 'predication'. However, we should keep in mind that in linguistically predicating
one term of another, I claim that the metaphysical predication relation holds between the referents of the
linguistic predicate and linguistic subject.

'predicate', there is a relation between terms. Let's call the relation between two terms where the first is predicated of the second 'linguistic predication' (or l-predication). We can think of each simple instance of l-predication as the verbal answer to one of questions talked about above.

Aristotle, however, does not use '*katagorein*' primarily to denote a relation between terms. Rather he commonly uses '*katagorein*' to talk about a relation between entities. Let's call the relation that holds between entities 'metaphysical predication' (m-predication). Aristotle is perfectly at ease with a sentence like "Human is predicated of Socrates". However, this sentence might strike a contemporary philosopher as a gross confusion of use and mention, and she might prefer "'Human' is predicated of Socrates" or even " 'Human' is predicated of 'Socrates'". We should keep in mind that Aristotle allows predication to be a relation between things.

It is clear that Aristotle takes l-predication and m-predication to be related in an important way. When we l-predicate one term of another, we make a statement the truth of which depends on whether various entities stand in the m-predication relation to one another. Aristotle takes assertion or affirmation to require the 'weaving together' ('*sumplekein*') of terms.[2] When we make an affirmative assertion, it is true just in case the entities referred to by the terms are combined in the world. At *Metaphysics* Θ.10, Aristotle says:

> What is [and what is not] in the strictest sense are truth and falsity. In the objects, this is being compounded and divided, so that whoever thinks the divided to be divided or the compounded to be compounded

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[2] As Ackrill (1963) p73ff notes, Aristotle's use of '*sumplokên*' calls to mind Plato's use of the same term in the *Sophist*. Plato tells us that an assertion requires that a verb and a name be woven together, and that a simple list of words is not yet an assertion, see *Sophist* 262e6. Plato also seems to think that true speech requires a weaving together of entities in the world, see *Sophist* 240c1 and 259e6. Aristotle further develops a similar view of what an assertion is in the *De Interpretatione*.

speaks the truth, and whoever holds contrary to the things errs. (1051b1-5)[3]

In a similar vein at *Metaphysics* E.4, Aristotle writes:

> What is as truth and what is not as falsity are about composition and division, and together these concern the apportionment of a contradiction. For truth has the affirmation in the case of what is compounded and the denial in the case of what is divided, and falsity has the contradictory of this apportionment. (1027b18-23)

From these statements, I take it to be clear that Aristotle has a correspondence theory of truth. There are many difficult issues involved in spelling out exactly what a correspondence theory of truth involves.[4] However, for present purposes we can start with a bare bones principle. We can understand the *Minimal Correspondence Principle* (MCP) as claiming merely that truth supervenes on being.[5] In other words, there could be no change in which statements, thoughts or propositions about the world were true without some change in the world itself.[6] It seems clear both that Aristotle subscribes to this principle, and that it is true. However, there are two respects in which (MCP) is far too weak to do any useful work in characterizing a correspondence theory of truth.

First of all, correspondence theorists generally want to say that what propositions, thoughts or statements are true *depends on* what the world is like, while the converse does not hold. Supervenience is merely a modal covariation relation, and does nothing to capture such dependence. Furthermore, in this instance, the supervenience seems to run in both directions; it is equally true that being supervenes

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[3]   Aristotle states at several places that truth and falsity have to do with combination and division. See *De Interpretatione* 1, 3, *Categories* 4, 5, 10. Aristotle uses the terms from the verbs '*suntithêmi*' and '*sunkeisthai*' for composition and compound.

[4]   See Pitcher (1964), Horwich (1999), and Blackburn and Simmons (1999), and Armstrong (2004) for a discussion of these issues.

[5]   This phrase is originally from Bigelow (1988), and shows up quite often in subsequent discussions of truthmaking. See Armstrong (2004) for a discussion of the supervenience principle and its shortcomings as a way of formulating correspondence theories of truth.

[6]   I am assuming that statements, propositions, etc. have their meanings essentially.

on truth, since we couldn't have a change in the way the world was without having some change in which statements about the world are true. (MCP), therefore, can't capture the asymmetry in the relation that Aristotle takes to hold between world and language.

Second of all, (MCP) says nothing about what sorts of features of the world get into the subvenience base for truths. But unless we make some kind of distinction about which features of the world do and which features of the world do not get into the minimal subvenience base for truth, (MCP) will be unable to distinguish the correspondence theory of truth from some of its main competitors. For example, if we allow changes in which theories are most useful to count as changes in the world, then (MCP) is compatible with pragmatic theories of truth. If we allow changes in which theories would be acceptable at the ideal end of human enquiry to count as changes about the world, then a theory like Putnam's which takes truth to be equivalent to ideal justifiability will satisfy (MCP).[7] If we allow radical changes in human perceptual capacities or explanatory interests to count as changes in the world, and think that such changes could have an effect on what sorts of theories are maximally coherent, (MCP) will be compatible with a coherence theory of truth.

It is clear that Aristotle, like any self-respecting correspondence theorist, would take his theory of truth to be incompatible with pragmatism, human-faced realism, or coherentism about truth. Furthermore, Aristotle clearly recognizes that while being and truth 'reciprocally imply the existence of each other', the truth of our thoughts or statements asymmetrically depends on the nature of the world. For example, at *Metaphysics* Θ.10, he writes:

> It is not through our thinking truly that you are white that you are white, but through your being white that saying this we speak the truth. (1051b6-9)

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[7]   I am thinking of the theory that Hilary Putnam outlines in *Reason Truth and History* (1981).

And at *Categories* 12:

> For among the things that reciprocate concerning the implication of being, the thing that is somehow the cause of being for the other can rightly be called prior by nature. And it is clear that there are some such cases. For there being a man reciprocates concerning the implication of being with the true statement about it. For if there is a man, then the statement by which we say that there is a man is true. And it reciprocates, for if the statement by which we say that there is a man is true, then there is a man. But the true statement is in no way the cause of the thing's being, while the thing certainly appears to be somehow the cause the statement's being true. For the statement is said to be true or false by the thing's being or not being. (14b11-22)

I take these statements to show that Aristotle is committed to a form of *Metaphysical Realism* (MR), which I take to involve a commitment to two theses. First, Aristotle holds that the truth of our statements and thoughts asymmetrically depends on the way that the world is. Second, Aristotle holds that facts about how we think, what theories we find to be useful, etc., are not to be counted among the features of the world that underlie the truth of our beliefs and statements.[8] Since Aristotle subscribes to (MCP) and (MR), we can attribute to him the following *Weak Truth-Maker Thesis* (WTMT).

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[8]   The version of metaphysical realism that I attribute to Aristotle here is similar to that laid out in Irwin (1988) pp5-7. There are some problems with my characterization. After all, some of the true claims that we make about the world will be claims about our beliefs and theories, and truths about our beliefs and theories will be belief- and theory-dependent in some way. Nevertheless, it seems that we want to call Aristotle a realist about our psychological states. It is difficult to spell out exactly how to deal with these issues, but I think that the following is correct in broad outline. Both the realist and the idealist can accept the claim that (i) all statements not about the mind depend on mind-independent features of the world. The idealist, however, holds that the antecedent in the above conditional is never satisfied, since all claims are about minds. Perhaps, if we add to (i), (ii) at least some of our claims are not about the mind, we will be on our way to a specification of the sort of metaphysical realism at issue. It will be a further matter to specify what sorts of claims are about the mind, and this might be something about which different realists will have different opinions; e.g. some metaphysical realists might include colors as the sorts of things that are mind-dependent, others might disagree. Finally, even in the case of psychological states, we can distinguish between the fact that someone is in a certain state and the claim or the belief that she is in such a state. We can then claim that realism amounts to the view that the fact that a person has a belief is not dependent on anyone's claiming or believing that the person has that belief.

(WTMT) Whenever a statement or thought is true, the truth of the statement depends on a mind-independent feature of reality.[9]

(WTMT) is still compatible with vastly divergent theories. For all it says, there might be a single feature of reality responsible for the truth of every true statement; such a theory would be maximally coarse-grained, since there is only one fact. On the opposite extreme, there might be a different feature of reality making true each true statement; facts are as fine-grained as the linguistic expressions that report them. Between these two unattractive extremes, there are a vast number of intermediate positions. If we want a truly substantive theory of truthmaking, (WTMT) must be supplemented with answers to two questions. First, what are truthmakers in general? Second, which truthmakers are there? In response to the first question, we might want to know whether truthmakers are simple or complex entities. If they are complex, then what are their parts and how do these parts go together to form truthmakers?

Two theorists might give the same answer to the first question, but might disagree about which truthmakers exist. For example, say that two people agree that truthmakers are complex entities containing universals and particulars as parts that stand in a fundamental relation of instantiation. Furthermore, say that both people take the sentence, "Bob is in pain" to be a true sentence. However, say that one of these two people is a reductive materialist while the other is a dualist. The second will affirm, while the first will deny, that some truthmakers have immaterial minds as particular components. The first will claim that the truthmaker for "Bob is in pain" will be the very same item as the truthmaker for the claim that Bob is in some physical state, while the second will claim that we need two distinct truthmakers for these claims.[10]

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[9]   Subject to the proviso that the statement isn't about a mind or theory. See the previous note for some thoughts about how to expand the principle to deal with statements about minds and theories.
[10]   The following example might be helpful. Take the *a posteriori* realism about universals espoused by Armstrong in *Universals and Scientific Realism* (1978). The fact that there are real universals in Armstrong's ontology counts as an answer to the general question of ontology, our first

In the *Categories* and *De Interpretatione*, Aristotle goes a long way toward answering these questions. He fleshes out an ontology of truthmaking by telling us what sorts of entities exist in the world, and telling us by which fundamental relations these entities combine with each other to yield truthmakers for our various claims about the world. Aristotle begins with the thought that the structure of our true statements roughly mirrors the structure of the world, and holds that corresponding to the combination of terms in a true affirmative sentence, there is a combination of things in the world.

Aristotle assumes that it is acceptable to work from data about linguistic predication to a theory of metaphysical predication, even though he does not think that the correspondence between our conceptual/linguistic apparatus and the world is due to the world's somehow being constructed or shaped by our concepts or language. As a thoroughgoing metaphysical realist, Aristotle's view that an examination of our language and intuitions can help reveal the nature of the world reflects a kind of hopeful optimism. Aristotle holds that human beings are rational creatures whose natural end is to understand the world, and that the world is structured in a way that allows things to achieve their natural ends. As such, he thinks that we can discover the nature of the world by rational investigation.

Aristotle thinks that human beings already understand, if only tacitly or potentially, a good deal about the nature of the world. Furthermore, this tacit understanding is embedded in the structure of human language and thought. Nevertheless, Aristotle does not take the match between language and world to be perfect. It would be a mistake to think that we will be able simply to read the structure

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question above. The further claim that which universals exist is to be answered by looking at our best scientific theories specifies the way in which we should answer the second question above.

of the world off the structure of language. An examination of two passages will be helpful here.

At the outset of the *Sophistical Refutations*, Aristotle tells us that it sometimes appears that an argument succeeds as a deduction or refutation when it does not actually succeed. There are several reasons for the apparent success and actual failure of an argument, but Aristotle tells us that "the most clever and common (such) argument is the one "through names" (*ho dia tôn onamatôn*)." (165a5-6) He goes on to explain why we are susceptible to fallacious arguments through names:

> For since it is not possible to bring the things themselves into conversation, we instead use the names of the things as symbols, and we suppose that the things that follow in the case of the names also follow in the case of the things, just like those performing a calculation do in the case of the counters. (165a6-10)

Take a very simple case of counting. Every time a cow walks into a pen, I put one black rock in a bowl. Every time that a cow walks out, I remove one black rock from that bowl. Provided that I have followed this procedure correctly, someone could find out how many cows were in the pen by counting the number of rocks in the bowl. There is a simple isomorphism between the cow-pen world and the rock-bowl model, and my understanding of this fact allows me to find out about the former by examining the latter.

Aristotle tells us that our use of names in reasoning is supposed to accomplish a function similar to the function accomplished by our cow counting system. When we use words in various ways in arguments, we are supposed to be able to find out things about the world. Often when we go wrong in an attempt to find out about the world by attending to language, our failure will be due to some sort of breakdown in the isomorphism between our linguistic models of the parts of the world that we are talking about, and those parts of the world.

Such breakdown of isomorphism is inevitable according to Aristotle. At 165a10-13 he claims, "Names and the multitude of accounts are limited, but the things are unlimited in number. It is necessary then for the same account or a single name to signify more than one thing."(165a10-13) The existence of this sort of equivocation indicates that the isomorphism between language and world sometimes fails, and this failure of isomorphism explains one reason for the existence of apparent refutations or deductions that are not true refutations or deductions. An argument that commits the fallacy of equivocation will be a merely apparent refutation or deduction. Unscrupulous sophists, who are more concerned with appearing wise than with being wise, exploit this failure of isomorphism to get over on their unsuspecting victims.

> Just as in the case of counting those who aren't clever at using the counters are misled by the experts, the same happens in the case of arguments where those inexperienced with the meanings of names mis-reason in their own discussions and when listening to others. (165a13-17)

In order to prevent ourselves from falling into error, we have to be on the lookout for ways in which our language fails to accurately mirror reality. We will be able to use logic, thought of as a theory about "what follows in the case of the names", as a tool for gaining knowledge about the world only if we have some assurance that there is not a mismatch between our names and the world.

In addition, Aristotle thinks that the syntactic structure of language can sometimes fail to mirror the ontological structure of reality.[11] For example, in chapter 22 of the *Posterior Analytics*, Aristotle notes that we can truly say both (a) and (b).

(a) The white (thing) is a log.

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[11] These two passages, therefore, show that isomorphism between ordinary language and the world fails in two ways. First, the two domains are not the same size. Second, while the M-predication relation is asymmetrical, the L-predication relation is not (at least if we take this to be something that holds between grammatical subject and grammatical predicate in ordinary natural language sentences). Both these failures of isomorphism can be corrected, however. First, we need to pay careful attention to phenomena like homonymy and equivocation. Second, we need to avoid confusing the surface grammatical structure of ordinary language with the underlying logical structure.

(b) The log is white.

Nevertheless, Aristotle tells us that (a) is somewhat misleading.

> When I say that the white is a log, I mean that something which happens to be white is a log, but not that the white is an underlying subject for the log. For it was neither being white nor being this particular white, that it came to be a log—so that it is not [white] unless coincidentally.[12] However, when I say that the log it white, I do not say that something different is white and that that happens to be a log, as for example when I say that the musical is white (in this case, I mean that the man who happens to be musical is white). Instead, the log is the underlying subject that came to be white, not by being something different than what is essentially a log or this log. If we must legislate, let's say that speaking the second way is predicating and that speaking the first way either is not predicating at all, or else is predicating not unqualifiedly, but coincidentally. What is predicated is something like the white, and that of which it is predicated is something like the log. (83a4-18)

Aristotle makes two important points in this passage. First, an object's being the referent of the grammatical subject of a predicative sentence does not entail that the object is the ontological subject of the instance of metaphysical predication underwriting the truth of that sentence. Second, he claims that being an ontological subject is essentially connected to being the sort of thing that can underlie change. Therefore, if we want to derive any conclusions about the nature of reality from an examination of the way that we talk about reality, we need to pay close attention to the order of predication. When we speak in a way that does not properly reflect the predicative structure of the world, Aristotle tells us that we either fail to predicate at

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[12]   I follow Irwin and Fine (1995) here and take the 'so that…' clause to indicate that the thing in question is only coincidentally *pale*. Barnes (1994) translates the last clause "…hence it is not a *log* except incidentally". Tredennick (1960) also takes Aristotle to be saying that the thing in question is only wooden or a log coincidentally. Both translations are possible renderings of the Greek, "…ὥστ' οὐκ ἔστιν ἀλλ' ἢ κατα συμβεβηκός" which specifies no subject complement for 'ἔστιν'. Nevertheless it seems difficult to square 'it is a log coincidentally' with what Aristotle is doing in the rest of the passage. He seems to be saying that the underlying subject *is* essentially a log (see 83a14) but only coincidentally a white thing. Furthermore, he emphasizes that unqualified linguistic predication requires that the ontological subject rather than a coincident of the ontological subject be the referent of the grammatical subject of the sentence.

all, or else that we predicate only in a derivative sense. Only when the syntactic structure of a predicative sentence is truly isomorphic with the ontological structure of the world do we have a case of unqualified predication.[13]

Take a sentence in which we have unqualified predication, like "The log is white." The truthmaker for this sentence will involve the holding of some relation between the semantic value of 'white' and the semantic value of 'the log' where the latter is a metaphysical subject. For the time being, let's simply call this relation 'm-predication'. Imagine that we had a collection of the truthmakers for all cases of unqualified predication. We will have gone a long way toward being able to specify the truthmakers for all the sentences in which there is coincidental predication going on. For example, the truthmaker for "The white is (a) log" will be the same as the truthmaker for "The log is white." In some cases, the story will be more complicated. For example, take "The musician is white." Aristotle seems to think that this sentence is made true by the facts that both musical and white are m-predicated of a single underlying subject.

A certain story about truthmaking is naturally suggested by the passages above. There are certain entities in the world that serve as ontological subjects, and there are entities (call them 'ontological predicates') which stand in a relation of m-predication to these. When we say true things about the world, our statements are made true by the holding of the m-predication relation between these entities. If we want to get a better understanding of what Aristotle takes to be going on, we need to get clear on three questions. What sorts of entities are ontological subjects? What sorts of entities are ontological predicates? What is the relation of m-predication holding

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[13] I think that there are two lessons to take from these passages. First of all, Aristotle wants us to distinguish the ontological form of truthmakers from the orthographic-grammatical form of sentences. Second, Aristotle thinks that we often have the ability to tell when the form of a sentence fails to reflect the form of the underlying truthmaker, and to modify our understanding of the sentence accordingly. For example, "The white is a log" *really* means that white is m-predicated of the log.

between these, and can it be analyzed in terms of more fundamental relations? We can begin to answer these questions by looking at some of Aristotle's comments in the *Categories.*

At *Categories* 1a16, Aristotle divides the things that are said (*tôn legomenôn*) into two classes. There are the things that are said with combination (*kata sumplokên legetai*) and those said without combination (*aneu sumplokês*). The things said with combination are simple assertions like 'Man runs,' or 'Man wins,', while 'man', 'runs' and 'wins' are said without combination. Despite the fact that Aristotle here uses only one-word expressions as examples of things said without combination, we should not take the distinction that he is making here to be a purely syntactic one between one word and multiple word expressions. Aristotle later counts some multiple word expressions to be among the things said without combination. At 1b25 Aristotle tells us that each thing said without combination, including complex expressions like 'in the Lyceum ('*en Lukeiô*') and 'in the agora' ('*en agora*'), signifies an item in one of the ten categories. So an expression's being syntactically simple is not a necessary condition for its being a thing said without combination.

Aristotle also tells us that the combination of simple expressions with each other produces affirmations that can be true or false. However, the combination of uncombined expressions with each other to form an affirmation involves more than simply giving a list of expressions. '*Hippos*' and '*leukon*' are given as simple expressions the first signifying a substance, the second a quality. However, the expression '*hippos leukon*' is not an affirmation, or even a grammatical sentence. I do not think that Aristotle would take '*hippos leukon*' to be either a thing said without combination or to be a thing said with combination. If we want to count the division of things that are said into combined and uncombined to be an exhaustive one, then we should hold that '*hippos leukon*' isn't a single thing that it said at all. Rather than

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having one thing said with combination, we have two simple expressions, '*hippos*' and '*leukon*', each of which is said without combination. To get a single thing said with combination, simple expressions must be woven together in the proper manner.[14]

We can also ask about the status of one-word paronymous expressions like '*grammatikos*' said in reference to a grammarian. Should we count these as things said without combination? To answer this question, we must ask whether '*grammatikos*' signifies an item in a single category. If '*grammatikos*' simply indicates a certain particular human being, then there is no problem with counting it as a thing said without combination. On the other hand, if '*grammatikos*' indicates the combination of grammaticality with a particular human being, something like 'grammatical man', then the expression would not indicate an object in a single category and so should not count as an expression said without combination by the test that Aristotle gives at 1b25ff.[15] However, neither does '*grammatikos*,' seem to be an affirmation of anything, and we might think that it should thus fail to count as something said with combination. If we are going to preserve the exhaustivity of the with combination/without combination distinction, we are forced to hold that '*grammatikos*' does not count as a single thing that is said at all, but is something more or less like an abbreviation of '*grammatikos anthrôpos*' which is a list of things said without combination that has yet to be woven together into a single assertion.[16]

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[14]   In the *De Interpretatione*, Aristotle tells us that the formation of an assertion requires the use of a verb. The distinction between a two-member list of simple expressions and a single complex assertion is also a central concern of Plato's in the *Sophist*.

[15]   Ackrill (1963) pp73-74 hypothesizes that Aristotle would not countenance a one-word expression meaning 'white man' as an expression said without combination, since it would not signify an item in a single category. Either the expression is said with combination, in which case Aristotle's examples like 'Man runs,' and 'Man wins,' pick out only a sub-category of things said with combination. Or Aristotle's division is not an exhaustive one. I respond to this by holding that not every syntactically simple expression counts as a single thing that is said in the technical sense under consideration by Aristotle.

[16]   Notice that the examples Aristotle gives at 1a16ff—"*Anthrôpos trechei,*' and '*Anthrôpos nika*' —involve a subject and an inflected verb. '*Grammatikos anthropos*' is missing the verb necessary to make it an assertion. Notice also that Aristotle gives the inflected verb forms '*trechei*' and '*nika*' as examples of things said without combination. Later, however, when Aristotle gives the expressions

One general observation to make here concerns Aristotle's method. He begins with some observations about how we speak (1a16ff), and makes a distinction between syntactically simple and syntactically complex expressions. He then claims that corresponding to the things that are said without combination, certain entities exist which can be grouped into the categories (1a20-1b10 & 1b25-2a11). We then find mismatches between the structure of the linguistic data that Aristotle begins with, and the structure of the ontology that he ends up with. For example, we see that some syntactically simple expressions do not indicate a single entity, while some multiple word expressions do indicate a single entity.

I suggest that Aristotle wants to attribute these differences to failures of ordinary language to mirror the underlying structure of the world. Aristotle will put some restrictions on what it is to be a proper thing that is said, and these restrictions will be semantic. A proper thing that is said either indicates a single categorial item, or indicates a combination of simple categorial items. We are told in the *De Interpretatione* that the task of affirming a combination requires a verb. Without a verb we cannot turn a list of things said without combination into a single thing said with combination.

At *Categories* 1a20, Aristotle turns from the division of the things that are said (*ta legomena*) to the division of the things that are (*ta onta*). Aristotle is drawing a contrast between '*ta legomena*' (at 1a16) and '*ta onta*' (at 1a20), indicating that he now means to talk about the nature of the things in the world signified by our expressions, rather than about the expressions themselves.

Aristotle divides entities (*ta onta*) into four basic types by introducing two relations that a given entity can bear or fail to bear to a subject. There is the inherence

without combination that signify entities in the categories, he uses infinitives (2a2-4). If the infinitives count as names of categorical items, should inflected verb forms be treated in the same way as other paronymous expressions? They are derived from the names of entities by a change in ending.

relation, some entities are *in* a subject (*en hupokeimenô*), some fail to be *in* any

subject. And there is the said-of relation, some entities are said-of a subject (*kath'*

hupokeimonou tinos legatai), some are not said-of any subject. Any entity can be

placed in one of four types depending on whether or not it stands in each of these

relations to a subject. The four types of entities, and examples, given by Aristotle are

as follows:

(i) Those said-of a subject, but not in any subject. e.g. man is said-of a

subject, the individual man, but is not in any subject.

(ii) Those in a subject, but not said-of any subject. e.g. the individual

grammatical knowledge is in a subject, the soul, but is not said-of any

subject; and the individual white is in a subject, the body (for all color

is in <a> body), but is not said-of any subject.

(iii) Those both said-of a subject and in a subject. e.g. knowledge is in a

subject, the soul, and is also said-of a subject, grammatical knowledge.

(iv) Those neither in a subject, nor said of a subject. e.g. the individual

man (*ho tis anthropos*) or the individual horse (*ho tis hippos*)—for

nothing of this sort is either in a subject or said-of a subject.

Traditionally commentators have taken the entities which are said-of a subject

to be universals, and those which are not said-of any subject to be particulars, and the

entities which are in a subject to be accidents, and those which are not in any subject

to be substances. [17] So, the four-fold division gives us (i) universal or secondary

substances, (ii) particular accidents,[18] (iii) universal accidents, (iv) particular or

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[17]   See, for example, the commentaries on the *Categories* by Ammonius, Simplicius, and Porphyry.
See Ammonius *In Aristotelis categorias commentarius* pp. 9, 25-27; Simplicius *In Aristotelis categorias
commentarium* Vol. 8 pp. 44-51; Porphyry *In Aristotelis categorias expositio per interrogationem et
responsionem* Vol. 4,1 pp. 73-88.
[18]   For the present we need attach no ontological weight to this use of 'particular'. One of the
primary controversies surrounding the interpretation of the *Categories* concerns the status of type-ii
entities. What does Aristotle take a particular accident to be, and in what sense is it particular? In order

primary substances. Aristotle takes the division of the *onta* into types (i)-(iv) to be an exhaustive and exclusive categorization of all the entities in the universe. This division complements the division of the things that are into the ten categories in chapter 4. Each of the things said without combination signifies an entity in one of the ten categories, and each of these entities is of one of types (i)-(iv).

Corresponding to the inherence and the said-of relation, there are two ways in which an entity can be an ontological subject. We might understand the relation that I have been calling 'm-predication' to this point as a disjunction of the inherence and said-of relations. For one entity to be m-predicated of another is for the first to inhere in the second or for the first to be said of the second. Accordingly, the ultimate truthmakers for our claims will consist in the obtaining of the inherence and said-of relations between the things that are.[19] Furthermore, I think that Aristotle takes inherence and the said-of relation to be fundamental relations, and takes the holding of these relations between entities to be fundamental facts. A relation is fundamental if the holding of the relation between entities is not ontologically analyzable into the

to answer this question we need to look more closely at Aristotle's statements about inherence and the said-of relation, which I do at length in what follows.

[19] This analysis of m-predication turns out to be too simple. First of all, I will argue in chapter 8, that Aristotle needs to accept a more complex analysis of some true cases of linguistic predication. When we linguistically predicate 'pale' of 'Socrates', the truthmaker is the inherence of a nonsubstantial particular pallor in Socrates. However, there is also the universal pallor, which can be metaphysically predicated of Socrates, because in it said-of something that inheres in Socrates. Furthermore, while I begin by holding that Aristotle takes all truthmakers to involve the holding of relations between distinct entities, I do not think that this story is quite right. In chapter 10, I argue that Aristotle will take some truthmakers—the ones making true claims about the essence of an entity—to be non-relational. So, for example, I start out taking "Socrates is human" to be made true by the universal human's being said-of Socrates. However, I will later deny that the most fundamental way of thinking about the truthmaker for "Socrates is human" involves a relation between Socrates and any other entity. Rather the truthmaker involves only the intrinsic nature of Socrates—it this way I take the truthmaker to be non-relational. Socrates' being human explains the holding of the said-of relation between the universal and Socrates, rather than *vice versa*. Further development of my position will have to await the development of some further technical apparatus. For now, I will take a relation to be fundamental if the fact that the relation holds between entities cannot be *explained* in terms of the holding of other relations between entities.

holding of any further relations between entities. What I mean by a fundamental relation should become clearer by an examination of some examples.

A trope-theorist might give the following sort of account of the truthmaker for "Socrates is pale".[20] The fundamental entities in the world are tropes or particular property instances, like the paleness of Socrates which is numerically distinct from the paleness of Coriscus. There are two fundamental relations that tropes can stand in to each other—resemblance and bundling. "Socrates is pale" is true if and only if there is a trope t, which is a paleness trope, and 'Socrates' refers to a bundle of tropes that includes t. For t to be a paleness trope is for it to be a member of a primitive perfect resemblance class which includes all and only paleness tropes. The relations of resemblance and bundling are fundamental relations on this ontology, in that they are not susceptible of further analysis. For a paleness trope to be part of a bundle of tropes just is for it to stand in a certain relation to these other tropes. Most importantly, the fact that certain tropes are cobundled does not consist in the existence of any further *cobundling* trope. Facts about cobundling are rock-bottom facts. The same goes for resemblance. The fact that two pale tropes perfectly resemble each other is not accounted for by the existence of any further *resemblance* trope. The fundamental ontology of this trope-theorist contains tropes, and the fundamental facts consist in the holding of resemblance and bundling relations between these tropes.

On the other hand, a realist about universals might give the following account of the truth-maker for the sentence "Socrates is pale".[21] There are two sorts of

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[20]   For a discussion and defense of trope theories, see Stout "Are the Characteristics of Particular Things Universal or Particular?" (1923), Williams "The Elements of Being" (1953), Campbell "The Metaphysic of Abstract Particulars" (1981), and *Abstract Particulars* (1990). I am assuming that 'pale' refers to a real quality of objects, and that the trope theorist would think that there are paleness tropes. While many trope-theorists might prefer to deny the real existence of color tropes as objective features of external objects, I do not think that much in what follows rests on the choice of example.
[21]   See Armstrong (1978), and (1989). I assume that paleness is a real universal for the sake of the example.

fundamental entity in the world: universals and particulars. There is a fundamental relation, instantiation, which particulars bear to universals—that is, particulars instantiate universals. "Socrates is pale" is true if and only if the particular referred to by 'Socrates' instantiates the universal indicated by 'is pale', call it *'paleness'*. We explain the fact that Socrates is pale by saying that the instantiation relation holds between Socrates and *paleness*. 'Is pale' is not a primitive predicate on this picture. Instead the application of the predicate 'is pale' to an object is to be analyzed in terms of that object's bearing the instantiation relation to the universal *paleness*. On the other hand, take the fact that an object bears the instantiation relation to the universal *paleness*. The relational predicate '...bears the instantiation relation to…' is primitive. We do not analyze instantiation in terms of the holding of any further relation between the universal *paleness*, the particular, and some other universal like *instantiation*. According to the position under consideration, we cannot analyze the application of 'instantiates' by pointing to anything more fundamental.

A relation is fundamental, if the fact that entities stand in the relation is not analyzable in terms of any further relation between entities. Imagine a theorist who is a non-reductive realist about love, and who also accepts the existence of real universals. Such a theorist might say that the truth of "Ernie loves Bert" is to be analyzed in terms of the particulars, Ernie and Bert (perhaps in some particular order), and the universal relation *loving*. The entities in question are combined in some way to form the truthmaker for the sentence; let's say that Ernie and Bert together instantiate *loving*. There is an entity in this ontology that corresponds to the predicate 'loves', the universal *loving*. However, there is no entity in this ontology that corresponds to the predicate 'instantiates'. Rather, some of the entities that the proponent of universals accepts simply bear the instantiation relation to others, and this fact is not further

analyzable. Instantiation is, accordingly, a fundamental relation in the universalist's ontology.[22]

I suspect that every ontology will accept some relations as fundamental.[23] If we were to require that every relational claim be susceptible to the same type of analysis, we would end up being subject to a version of Bradley's regress.[24] Armstrong worries about this threat of Bradley's regress, and hopes to avoid it by asserting that instantiation is not really a relation at all, but is a "non-relational tie".[25] However, this language is somewhat obscure. It is unclear what a tie between two objects is supposed to be, if it is not a relation. In later works, Armstrong claims that instantiation is a relation, but holds that it is unlike other relations in that it is fundamental.[26] It seems clear to me that if we want to accept instantiation as part of our fundamental story about the world, then we must hold that it is a relation. If we want to avoid Bradley's regress, we need to hold that not every relation is susceptible

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[22]   The same distinction can be made about whatever the semantic values of non-relational predicates are supposed to be. In some cases, the fact that x is F cannot be analyzed into the holding of some relation between x and some entity indicated by F. Take the predicate 'is a universal' in "*Redness is a universal.*" It doesn't seem plausible to hold that the truthmaker for this claim is that the entity *Redness* instantiates the universal *Univeralhood*. It seems better to hold that 'is a universal' is a primitive predicate which is not analyzable in terms of any further entities.

[23]   At least it seems to me that a sensible method in ontology will be to take certain relations or predicates to be fundamental, and to take others to be analyzable. I suppose, however, that there are alternatives. On one of these, there are no fundamental relations at all and analysis can proceed forever. On another, every relation and every predicate will be equally fundamental and none will be further analyzable. I suppose that we could also have a theory on which some monadic predicates are fundamental. The ontology outlined by Armstrong in *A World of States of Affairs* (1997) seems to be such a theory. We are given states of affairs as primitive entities, and we arrive at particulars and universals by applying the predicates 'is a universal part of' and 'is a particular part of' to the states of affairs. These predicates seem to be fundamental.

[24]   Say that (a) Socrates' instantiating *Paleness* is to be analyzed along the same lines as Socrates' being pale. Then (b) the instantiation relation will have to hold between instantiation on the one hand, and Socrates and Paleness on the other. But, (c) if the holding of this second instantiation relation is susceptible of analysis, then (d) Instantiation will have to stand in the instantiation relation to instantiation on the one hand, and instantiation, Socrates and Paleness on the other. And so on… This sort of regress strikes me as exactly the sort of thing that Aristotle is concerned to avoid.

[25]   See Armstrong (1978). Also see Armstrong (1989) and Armstrong's *A World of States of Affairs* (1997).

[26]   See Armstrong (1989). Armstrong also uses the phrase 'fundamental nexus'. I think that what is important here is the fact that the fundamental relations do not admit of further ontological analysis.

of further analysis. The relations that do not admit of analysis must be recognized as fundamental.

I have said a bit about what I mean in claiming that inherence and the said-of relation should be counted as fundamental relations for Aristotle. But can we give an account of what it is for a relation to be fundamental in Aristotle's terms? I think that we can. While Aristotle classifies the things that are (*ta onta*) in terms of whether they bear the inherence and said-of relations to anything, he does not take inherence and the said-of relation themselves to be among the *onta*. Inherence and the said-of relation do not seem to be entities at all. Rather the entities corresponding to the things said without combination bear these relations to one another. The fundamental facts on Aristotle's view are the holding of the inherence relation and the said-of relation between the *onta*. Furthermore, when Aristotle tells us at 1b25ff that each of the things said without combination signifies an entity in one of the categories, there is good reason to deny that he is thinking of inherence and the said-of relation as among the categorial entities.[27] In claiming that a relation—such as inherence or the said-of relation—is fundamental for Aristotle, I mean that it is a relation that holds between entities in the categories, and which is not such that its holding can be further analyzed in terms of other relations between categorial entities.

When we give an ontology, we want to specify the *fundamental* types of entities that exist, and the *fundamental* relations that these entities stand in to one another. We can then specify the ultimate truth-conditions for all our claims about the

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[27] Here is an argument for not counting inherence as one of the *onta*. Take a particular instance of inherence, and ask whether it inheres in anything or not. If it does not, then it is a substance, which is unacceptable. If it does, then we must explain the fact that it inheres in something as a matter of the holding of the inherence relation between it and something else. But then we can ask whether the resulting inherence relation inheres in anything, and we are off on Bradley's regress. We will run into the same sort of regress if we think that the holding of inherence and said-of relations can be paraphrased in terms of categorial entities. I take it to be the case that Aristotle would find such regresses unacceptable.

world in terms of these entities and relations. So far I have claimed that Aristotle takes inherence and the said-of relation to be two fundamental relations.

Inherence is a relation that holds between accidents and substances. Accidents inhere in substances, and are ontologically dependent on the substances in which they inhere, in that it follows from the very nature of the accident in question that it inheres in the substance in which it inheres. I argue at some length that Aristotle accepts the existence of both particulars and universals in the category of substance and in each of the non-substantial categories. Nonsubstantial particulars are entities like the particular instance of grammaticality belonging to Socrates, or the particular instance of pallor inhering in Socrates. Every nonsubstantial particular inheres in a particular substance upon which it is ontologically dependent. Both nonsubstantial particulars and particular substances have natures, in that neither is a *bare* particular.

Nevertheless, although they have natures, each of these particulars has a very simple nature. The nature of each particular can be fully specified by locating it in the various kinds to which it belongs. For example, the particular human being has a nature that is exhausted by being human, or its being rational, two-footed, terrestrial animal. The particular pallor has a nature that is exhausted by its being a specific shade of color. Any other property that we attribute to the human being or to the particular instance of pallor belongs to it because of relations that it stands in to other things. So when we say e.g. that Socrates is pale, what we say is true because the individual Socrates stands in a relation to an instance of pallor. When we say that the pale thing is musical, what we say is true if both the instance of pallor and the instance of musicality inhere in a particular substance. At the most basic level of Aristotle's ontology, we have a whole bunch of particular entities, with each of the nonsubstantial particulars inhering in particular substances.

Aristotle does not take particulars to be the only entities that exist, however. He also accepts the existence of universals, which are said-of both particulars and subordinate universals. I said above that we specify the nature of a particular by locating it in the kinds to which it belongs. These kinds are universals. I argue that Aristotle takes universals to be wholes which have particulars as parts, and that he takes the said-of relation to be a whole-part relation. I suggest that Aristotle takes the relation between universals and particulars to be something like the relation that holds between animals and their atomic constituents. Neither an animal nor an Aristotelian universal is a simple collection of its parts. Nor, however, is either an entity that is completely independent of the parts that constitute it at any given time. On my view, Aristotle thinks of universals as entities that endure through time and are composed out of different particulars at different times. Furthermore, these universals bear inherence and said-of relations to one another, and the holding of these relations between universals is not simply reducible to the relations that their particular parts bear to each other. Aristotle conceives of science as the study of the relations that universals bear to one another, and takes these relations to underwrite the long-term stability of the world.

Aristotle also holds that substantial individuals are *primary substances*. In this way, substantial individuals are ontologically prior to other things. However, it is difficult to see how substantial individuals can be prior to other things given some of what Aristotle says about priority. In the end, I think that Aristotle takes primary substances to be prior to other things by being 'causes of being' for those things.

In the following two chapters, I give a preliminary analysis of what Aristotle says about the inherence and said-of relations in the *Categories*. It soon becomes evident that there are major interpretative difficulties involved in getting clear about the precise nature of these relations. What Aristotle says at one point often conflicts

with what he says elsewhere. In chapters 4-6, I focus on the difficulties involved in constructing a coherent account of the inherence relation, and argue both that Aristotle accepts the existence of nonsubstantial particulars and that he takes inherence to involve ontological dependence. As a result of these views, I am forced to say that some of Aristotle is mistaken to claim that universal accidents can inhere in particular substances.

In chapter 7, I argue that Aristotle takes the said-of relation to be a kind of whole-part relation, and that he takes universals to be constituted by particulars. In chapter 8, I examine Aristotle's claim that non-substantial universals inhere in particular substances on which they are not ontologically dependent. I consider a number of possible explanations for Aristotle's making this claim, which conflicts with his definition of inherence. I also suggest, in chapter 8, that Aristotle's problematic claims about inherence are ultimately rooted in his view that particular substances are ontologically fundamental. However, given Aristotle's explicit definitions of priority in the *Categories*, it is hard to see how particular substances could be prior to other things, and in chapter 9, I turn to the task of trying to reconstruct a notion of ontological priority that will do the work that Aristotle wants done. I argue that there is a notion of priority suggested, but not fully developed, in the *Categories* according to which one entity is prior to another by being a cause of being for it. Primary substances are ontologically fundamental by being causes of being for other entities. In chapter 10, I continue to examine ontological priority in Aristotle, and suggest that Aristotle takes particular substances to be ontologically fundamental because they alone are purely nonrelational entities. In other words, while the essence of any other entity at least partially consists in fundamental relations that it bears to other things, the essence of a primary substance does not consist in its bearing any such relations to other things.

CHAPTER 2

THE SAID-OF RELATION

Section 2.1: Preliminary Characterization of the Said-Of Relation

In this chapter I examine Aristotle's characterization of the said-of relation, and consider some problems involved in trying to understand this relation. Throughout the *Categories*, Aristotle tells us that the genera and species of an entity (1b10ff, 2b7ff), as well as the differentiae characteristic of an entity's species and genera (3a1-3, 3a21ff), are *said-of* that entity.[1] Furthermore, the genus and differentia are said-of a species, and the higher genera and differentiae are said of the lower genera.

At 1b10ff, we are told that the said-of relation is transitive:

(Trans$_{OF}$) If x is said-of y and y is said-of z, then x is said-of z.

Aristotle also tells us that differentiae are genus-specific (1b16ff.), which we can render as follows. Where g and $g*$ are genera and d is a differentia:
(GSD$_{OF}$) If g and d are immediately said-of $g*$, then d is said-of any entity only if $g*$ is also said-of that entity.[2]

Aristotle also characterizes the said-of relation in terms of linguistic predication, and contrasts it with the inherence relation. At 2a19ff, he writes:
> It is clear... that if something is said of a subject both its name and its definition are necessarily predicated of the subject. For example, man is said of a subject, the individual man, and the name is of course predicated (since you will be predicating 'man' of the individual man), and also the definition of man will be predicated of the individual man (since the individual man is also [a] man). Thus both the name and the definition will be predicated. But as for things that are in a subject, in most cases neither the name nor the definition is predicated of the subject. In some cases there is nothing to prevent the name from being

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[1] I use 'said-of' with the hyphen to translate Aristotle's use of the technical phrase '*kath' hupokeimenou tinos legesthai*.' For example, Aristotle tells us that human (the species) is said-of the individual human by writing, "*[A]nthrôpos kath' hupokeimenou legetai tou tinos anthrôpos*." We might translate this sentence more literally as "Human is said of some particular human as subject."
[2] See *Categories*, 1b16-24.

predicated of the subject, but it is impossible for the definition to be predicated. For example, white, which is in a subject (the body), is predicated of the subject; for a body is called 'white'. But the definition of white will never be predicated of the body. (2a19-34. translation Ackrill)[3]

Aristotle indicates that he is willing to allow features about the way that we ordinarily talk to count as evidence for whether one item is said-of another. Aristotle marks a distinction between the said-of relation, which holds between things, and the relation of linguistic predication, by his use of two different phrases. That which is *said-of* a subject (*tôn kath' hupokeimenou legomenôn*) is such that both its name and definition are (linguistically) predicated of the subject (*katêgoreisthai tou hupokeimenou*). The said-of relation is part of Aristotle's formal ontology, it is a technical notion that he is introducing. However, he takes himself to be offering a test for whether the said-of relation holds in terms of what we ordinarily say. I take '*katêgoreisthai tou hupokeimenou*' to be a less technical expression in terms of which Aristotle wants to explicate the said-of relation. It will be useful to examine how the less technical relation of being predicated of a subject is supposed to work.[4]

The predication that is involved in 'being predicated of a subject' (*katêgoreisthai tou hupokeimenou*) is thought of as a relation that holds between a name or other linguistic expression and a non-linguistic object. Let's call this relation

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[3]   φανερὸν δὲ ἐκ τῶν εἰρημένων ὅτι τῶν καθ' ὑποκειμένου λεγομένων ἀναγκαῖον καὶ τοὔνομα καὶ τὸν λόγον κατηγορεῖσθαι τοῦ ὑποκειμένου· οἷον ἄνθρωπος καθ' ὑποκειμένου λέγεται τοῦ τινὸς ἀνθρώπου, καὶ κατηγορεῖταί γε τοὔνομα, – τὸν γὰρ ἄνθρωπον κατὰ τοῦ τινὸς ἀνθρώπου κατηγορήσεις· – καὶ ὁ λόγος δὲ τοῦ ἀνθρώπου κατὰ τοῦ τινὸς ἀνθρώπου κατηγορηθήσεται, – ὁ γὰρ τὶς ἄνθρωπος καὶ ἄνθρωπός ἐστιν· – ὥστε καὶ τοὔνομα καὶ ὁ λόγος κατὰ τοῦ ὑποκειμένου κατηγορηθήσεται. τῶν δ' ἐν ὑποκειμένῳ ὄντων ἐπὶ μὲν τῶν πλείστων οὔτε τοὔνομα οὔτε ὁ λόγος κατηγορεῖται τοῦ ὑποκειμένου· ἐπ' ἐνίων δὲ τοὔνομα μὲν οὐδὲν κωλύει κατηγορεῖσθαι τοῦ ὑποκειμένου, τὸν δὲ λόγον ἀδύνατον· οἷον τὸ λευκὸν ἐν ὑποκειμένῳ ὂν τῷ σώματι κατηγορεῖται τοῦ ὑποκειμένου, – λευκὸν γὰρ σῶμα λέγεται, – ὁ δὲ λόγος τοῦ λευκοῦ οὐδέποτε κατὰ τοῦ σώματος κατηγορηθήσεται.

[4]   I use, '…is **said-of** a subject' to translate '*kath' hupokeimenou tinos legetai*', which is a bit of Aristotle's technical vocabulary. Aristotle sometimes uses '*kath' hupokeimenou*' and a form of the verb '*katêgorein*' to indicate the said-of relation. The roundabout use of an object plus '*kath' hupokeimenou*' indicates the use of the technical notion. The less prolix '*katêgorein*' + *epi* + object indicates the less technical notion 'is predicated of'. I use 'said-of' with the hyphen to indicate that the technical relation is indicated.

L-Pred. We can give truth-conditions for the holding of the **L-Pred** relation in terms of the well-formedness and truth of certain sentences. Where $\ulcorner A \urcorner$ is a linguistic expression, x is an object, and **L**(x) is a function from an object to an expression uniquely designating that object:[5]

(LPred) **L-pred**($\ulcorner A \urcorner$,x) if and only if $\ulcorner L(x)$ is (a/an) $A \urcorner$ is true.[6]

What we want to capture is a relation between a linguistic item and a nonlinguistic entity that holds whenever the sentence formed by linguistically-predicating the linguistic item of an expression denoting the entity is a true sentence. Next we need to say something about names and definitions.

Aristotle distinguishes cases in which an entity is merely indicated in a case of linguistic predication from cases in which the entity is named. For example, in the sentence "Socrates is brave," Aristotle thinks that both 'Socrates' and 'brave' ('*andreios*' is the masculine singular) indicate entities.[7] 'Socrates' indicates a certain individual man, and 'brave' indicates a certain quality. However, while 'Socrates' is the name of the individual that it indicates, 'brave' is not the name of the entity that it indicates. The name of the quality in question is 'bravery' ('*hê andreia*' is feminine singular).[8] The attempt to linguistically predicate the name 'bravery' of Socrates, presents us with the ungrammatical "Socrates is bravery".[9]

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[5]   Assume for the sake of simplicity that each entity has exactly one uniquely designating expression, let this expression be its name in a language with no ambiguous names.

[6]   This is an English translation of a schema that, in the Greek, lacks the indefinite article. The Greek sentences translated by "Socrates is **a** man," ('*Sôkratês anthrôpos esti*,') and "Socrates is pale," ('*Sôkratês leukos esti*.') have a similar syntactic structure.

[7]   I use 'indicate' as neutral between naming and designating without naming. In a canonical definition as Aristotle conceives it, the expression indicating the differentia will be an adjective, and the expression indicating the genus will be the name of the genus. A problem might arise, since the name of the differentia is best taken to be an abstract noun and it is not clear that we will be able properly to linguistically predicate this term of the subject in question.

[8]   See *Categories* 1a12ff. I largely follow Ackrill in my view about this passage. What Aristotle says here is closely related to his views about paronymy. Aristotle introduces the concept of paronymy, "When things get their name from something, with a difference in ending, they are called *paronymous*. Thus, for example, the grammarian (*ho grammatikos*) gets his name from grammar (*hê grammatikê*), and the brave-man (*ho andreios*) gets his from bravery (*hê andreia*)." A full discussion of paronymy is

In the case of predicating a thing's definition of a subject, I take Aristotle to be thinking of linguistically predicating a definition-indicating phrase of the subject in question. Take the case of human and Socrates. Assume that the phrase 'rational animal' gives the definition of human. We can L-predicate the name of human, '*anthrôpos*' of Socrates, and we can L-predicate the phrase 'rational animal' of Socrates. In the case of Socrates and white, we are unable to linguistically predicate the definition of white of Socrates. The sentence resulting from an attempt to do so— something like "Socrates is (a) lightest color"—is at best a category mistake. In cases where one item is not said-of another, Aristotle tells us that we will never be able to L-predicate the definition-phrase of the entity in question.

We end up with the following test for whether the said-of relation holds between two entities. Let N(x) and Def(x) be functions from entities to linguistic expressions. N(x) takes us to the linguistic expression that is the name of x. Def(x) takes us to a linguistic phrase of the form ⌜Aish B⌝ where ⌜Aish⌝ is an (adjectival) expression indicating the immediate differentia of x, and ⌜B⌝ is an expression indicating the immediate genus of x. So in 'rational animal' the differentia of man, rationality, and the genus of man, animal, are both indicated while only the latter is named. We can see Aristotle first as laying down a necessary condition on the holding of the said-of relation:

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beyond the scope of this project, but there are a couple of points that can be made. First, paronyms are not words, but things. One thing's being a paronym of another depends on a relation between non-linguistic entities. *Ho andreios* is called '*ho andreios*', because a certain man bears a relation to a certain quality, where the quality in question is named '*hê andreia*'. While I cannot establish my claim here, I think that '*ho andreios*' is somewhat ambiguous. On the one hand, the phrase can be used to refer to a certain man, the underlying subject of the instance of bravery; on the other hand, the phrase can be used to refer to the complex of that man and the quality of grammaticality. In the latter case, I do not think that '*ho andreios*' serves as an expression that refers to a single categorial entity, nor do I think that '*ho andreios*' serves as a single thing which is said.

9   In Greek, the sentence ('*Sôkratês andreia esti.*') would have a mismatch in the gender of the subject and adjective. The sentence would not even be syntactically well-formed. Notice, however, that to linguistically predicate 'animal' of Socrates in Greek, we have to use the neuter form of the noun 'animal': '*Sôkratês zôon esti.*' In this sentence, we do predicate the name of the universal *animal* of Socrates.

(OF) For any two entities x and y, if x is said-of y then **L-Pred**(N(x), y), and **L-pred**(Def(x),y).

Does Aristotle think that we can give sufficient conditions for the holding of the said-of relation in terms of L-predication as well? While he does not explicitly say as much, he does tell us that in cases where the inherence relation holds, the definition of the inherent entity is never properly linguistically predicated of the subject. On the assumption that Aristotle takes inherence and the said-of relations to be the only relations that underlie true linguistic predication and to be exclusive of each other, the consequent of **(OF)** will then be sufficient for the antecedent. I do not think that Aristotle intends a relation other than inherence and the said-of relation to hold between an ontological predicate and its subject.[10] Accordingly, I suggest that he would accept:

(OF1) For any two entities x and y, x is said-of y if and only if **L-Pred**(N(x), y), and **L-pred**(Def(x),y).

It is important to emphasize that **(OF1)** is intended as a test for whether or not the said-of relation holds, and not as an ontological analysis of the said-of relation. Aristotle is not trying to define the said-of relation in terms of anything more ontologically fundamental. The linguistic facts are not meant to explain the holding of the said-of relation. Rather, the linguistic facts are the way they are because our language reflects the difference between inherence and the said-of relation. Why is it the case that we can say, "Socrates is (a) man," but not "Socrates is (a) bravery"? It is because the syntax of our language reflects a certain deep truth about the world—the fact that Socrates bears a different relation to bravery than he does to man.[11] We

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[10]   I do not think that Aristotle means to hold that there is a relation between entities other than the said-of relation which holds when both the definition and name of one is linguistically predicable of the other. However, perhaps Aristotle takes identity to be such a relation. If he does, then my discussion of the logical properties of the said-of relation below will be affected.

[11]   Notice, there is a certain problem with Aristotle's methodology here. We end up with the same kind of grammatical monster in the case of "Socrates is humanity". Aristotle's even having a test here relies on a substantive doctrine about which of the many phrases indicating an entity are names of the entity. And our intuitions about which words count as names will depend on what category we think an

cannot linguistically-predicate the name and definition of bravery of Socrates, because bravery does not bear the said-of relation to Socrates.

What is the difference between the relation that Socrates bears to man and the relation that Socrates bears to bravery? There are various ways in which we could describe the difference between the relations. People sometimes mark the distinction by saying that man is essentially predicated of Socrates, while bravery is accidentally or nonessentially predicated of Socrates.[12] We might try to fill out an account on which the differences between the said-of and inherence relations are to be explained in terms of differences between essential and accidental predication. For example, we might point out that while it is possible for Socrates to fail to be brave, it is not possible for Socrates to fail to be human. We might try to give an analysis of the said-of relation in terms of various modal facts along with a predication relation that is neutral between inherence and the said-of relation. For example, say that we think that property possession is a matter of bearing a relation of instantiation to a universal. We might say that to possess a property essentially is for it to be necessary that you have that property, while to possess a property nonessentially is for it to be possible for you not to possess the property. We will then have analyzed essential possessing a property in terms of necessity and a neutral notion of property possession.

I want to contrast this approach to essential and nonessential property possession with Aristotle's. On my view, Aristotle does not take the holding of the said-of relation between human and Socrates to be analyzed into a neutral relation of predication and some modal facts. Rather, I think that Aristotle takes predication to be analyzable in terms of inherence and the said-of relation. Furthermore, I think that the

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entity belongs to, which will already bring in substantive intuitions about what is said of what. If (OF1) was supposed to be more than a practical test, Aristotle would be in serious trouble.

[12]   Matters are somewhat complicated by the fact that Aristotle allows that there are necessary but nonessential properties of things, so-called *propria*. I think that Aristotle takes *propria* to inhere in their subjects, rather than to be said-of their subjects.

holding of the said-of relation explains the modal facts about for Aristotle, rather than vice versa.[13] I take Aristotle to propose the said-of relation as a fundamental relation in his ontology. Any attempt to define essential predication in Aristotelian terms will ultimately make reference to the said-of relation. The essence of something is the account of what the thing is, where this is to be thought of as the real definition of the object. In trying to explicate what the real definition of an entity is, we will talk about the said-of relation. The species is said-of the individual, and it is the primary answer to the question of what the individual is *because* it is immediately said-of the individual. Real definitions of a species are given in terms of the immediate genus of the species, and the final differentia distinguishing that species from every other species in the genus. The notion of species, and of immediate genus and differentia, are themselves to be defined in terms of the said-of relation. The species of an individual is the entity which is immediately said-of that individual; the genus and differentia of a species are the entities immediately said-of the species.[14] The proper

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[13]   In chapter 10, I argue that Aristotle takes all essential facts about an entity to be grounded in the identity of that entity, while all accidental facts are grounded in relations between distinct entities. In other words, the truthmakers for essential predication are nonrelational, while the truthmakers for other types of predication are relational. However, for the time being, I want to talk as if the truthmakers for essential predication involve the holding of the said-of relation between an entity and its species, genera, and differentiae. I will argue in chapter 7 that Aristotle takes the said-of relation to be a type of whole-part relation by which universals are composed of subordinate universals and particulars. In one way, I think that the holding of the said-of relation between universals and particulars is simply a brute fact about the world for Aristotle. Certain particulars go together to compose certain universals. On the other hand, I have some sympathy with a view on which it is primitive perfect similarity between particulars that grounds their being parts of the same universal. On the latter view, we might think that the similarity is more fundamental than the said-of relation. However, I am somewhat inclined to think that such primitive perfect similarity could exist even in an ontology that did not recognize the existence of universals—for example, certain theories on which there are tropes but no universals seem to fit the bill. Since Aristotle does accept universals in addition to particulars and internal relations of perfect similarity between particulars, we should not take his theory to be one on which the said-of relation reduces to similarity, in which case, we cannot give an analysis of the said-of relation solely in terms of similarity. Since, I don't see any other relation which Aristotle holds can be added to similarity to give us an account of the said-of relation, I think that he takes the relation to be fundamental.

[14]   It is unclear whether Aristotle holds that every species has both a genus and differentia said of it. If some items are related to others as determinates to determinables, then there will be no immediate differentia said of the determinate.

nominal definition of a term is the phrase produced by combining terms designating the entities immediately said-of the referent of that term. Furthermore, everything that is involved in giving a full account of the essence of a thing is said-of that thing. On the other hand, whenever something external to the essence of an entity is metaphysically predicated of a subject, it inheres in that subject.

Notice, from the above discussion of inherence and the said-of relation, it follows immediately that no entity can both be in and be said-of another entity. In cases of inherence, the definition is never predicable, but in cases of when one thing is said-of another, the definition is always predicable. We have already seen that the said-of relation is transitive. It is clear that the relation is not symmetric, since the universal human can be said-of Socrates, but Socrates is not said-of anything. Furthermore, it seems that neither the name nor the definition of the species (or subordinate differentia) can be linguistically predicated of the genus, and the same holds for the names or definitions of lower-order genera being predicated of higher-order genera. So the species cannot be said-of the genus, nor can lower genera and differentiae be said-of higher. That the said-of relation is not reflexive is clear. Socrates is a primary substance, and primary substances are said-of no subject. We might think that the name of Socrates can be linguistically predicated of Socrates. However, Aristotle tells us at 3a36-37 that there is no predicate from a primary substance and it is unclear whether he would take "Socrates is Socrates" as a case of linguistic predication. Even if Aristotle does take the name of Socrates to be L-predicated of Socrates, since Aristotle does not take there to be any definition of particulars,[15] there is no definition of Socrates available to be L-predicated of anything.

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[15]   For example, see *Metaphysics* 1036a3-5, 1039a28-b4.

However, it is less clear whether the relation is irreflexive. (OF1) requires us to hold that 'animal' and the definition of animal can be linguistically predicated of the species man, since animal is said-of the species (as well as being said of individual men). So the sentence 'Man is [an] animal,' expresses a truth, even when 'man' refers to a species, and a species *human* is not an animal. An interesting problem comes about because the word '*anthrôpos*' is ambiguous between the species *human* and an individual human being. Greek does not have an indefinite article, but sometimes Aristotle disambiguates by using a form of the indefinite pronoun '*tis*'. Hence, Aristotle could take the sentence '*zôon anthrôpos esti*,' ('[A] human is [an] animal,') as linguistically predicating '*zôon*' (the name of the genus animal) of the species *human*, or as predicating the name of the genus of an individual man.[16] Now take a sentence like 'Man is man,' as used to linguistically predicate the name of the species of the species itself. It seems clear that both the name and definition of man are linguistically predicable of the species man. Therefore, it seems that in cases where an entity has a definition, the entity is said-of itself.[17] Unless Aristotle rules out cases like

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[16] Some, e.g. Ackrill (1963) have taken this fact to indicate that Aristotle is confusing two different relations, the one between a kind and an individual, and the one between a kind and a subordinate kind, thereby holding that Aristotle conflates class membership and class inclusion. I think that this can be avoided by seeing the relation as something like the parthood relation, which will allow the relation to be straightforwardly transitive. Frede develops something like a mereological reading of the said-of relation extensively in his "Individuals in Aristotle" (1987). I argue that we should take the said-of relation as a relation of whole to part in chapter 7.

[17] It is clear that Aristotle does not think that individual substances have definitions, and that individual substances are not said-of anything. What is less clear is whether Aristotle thinks that there are sub-specific universals that have no definition. Owen (1965) seems to think that there are such entities. If Aristotle thinks that every universal is definable, then every universal will be said-of itself. Furthermore, since no universals exist without being said-of a particular, we could conclude that every entity that is said-of anything is said-of itself.

It might appear from the current discussion that the said-of relation is not being taken as primitive. However, I think that definability can be defined in terms of the said-of relation. On the assumption that the differentia and genus of a species are distinct, then we can say that an entity is definable if and only if it has two distinct entities immediately superordinate to it. One entity will be immediately superordinate to another if and only if, the second is said-of the first, and the second is not said-of anything distinct from the first which is also said-of the first. While we might be able to talk about definability independently of the said-of relation and we might have intuitions about which terms and entities have definitions, I still take Aristotle to hold that the fact that one entity is in the definition of another at bottom precisely is the fact that the said-of relation holds between the two. The fact that

'Man is man,' as improper predications, he can't hold that the said-of relation is irreflexive. Rather the relation will be reflexive over the restriction of the class of entities to the class of entities that have definitions, and any entity that is said-of anything will be said-of itself. Furthermore, if the said-of relation is not irreflexive, then it will not be asymmetric but antisymmetric.[18]

When Aristotle gives examples of entities that are said-of other entities, he includes both substances and nonsubstances—human is said-of the individual man, and knowledge is said-of a bit of grammatical knowledge. Both substances and nonsubstances can be subjects of the said-of relation. On the other hand, Aristotle seems to think that only substances can be subjects of the inherence relation.

Aristotle draws a strict contrast between things that are numerically one and things which are said-of something. He writes, "Unqualifiedly things that are indivisible (*ta atoma*) and one in number (*hen arithmô*) are said-of nothing as a subject" (1b6-7). Some of the entities that Aristotle takes to be said-of something also inhere in something. These entities are nonsubstances, and each of them inheres in a substance and is said-of a nonsubstance. These entities will generally be the species and genera in a nonsubstantial category. On the other hand, substantial species and genera will be said-of a subject, but will not inhere in any subject.

What we have so far should serve as a preliminary characterization of the said-of relation. The said-of relation is intracategorial and serves as a kind of ordering relation. At the bottom we have the entities that are not said-of anything. As we move on to entities said-of increasing numbers of things we find increasingly general genera.

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we have intuitions about what sorts of terms are definable before we accept Aristotle's ontology reflects the fact that we have some way of tracking when the said-of relation holds between entities. However, the said-of relation needn't be properly definable in terms of the things to which we have some pre-theoretic access

[18] So, $\forall x \forall y$ ((x is said-of y & y is said-of x) $\supset$ x = y). Aristotle will also accept:
$\forall x (\exists y (x$ is said-of y) $\supset$ (x is said-of x)).

While this picture of the taxonomy of entities is standard fare among interpreters of Aristotle, there are some troubling comments in the *Categories* that complicate matters. One serious problem involves Aristotle's treatment of differentiae.

Section 2.2: The Problem of Differentiae

Aristotle tells us that it is not properly definitive of substance to say that substance is what is not in any subject. While not being in any subject is necessary, it is not sufficient for being a substance, since the differentiae of substances are said-of something but are not in anything.

> So, no substance will be among the things in a subject. This is not, however, a proper characteristic of substance, but the differentia is also not in a subject. For footed and two-footed are said-of man, but are not in man; for neither two-footed nor footed are in man. (3a20-25)[19]

We can see that Aristotle wants to put forward two theses about the differentiae of substances. First, the differentiae of substances are not themselves substances. Second, the differentiae of substances are said-of substances. It is difficult, however, to see how Aristotle can coherently hold both these theses.

Ackrill (1963) worries that the claim that an entity outside the category of substance can be said-of a substance will lead to an absurdity. Given that Aristotle takes the said-of relation to be transitive, Ackrill worries that Aristotle will be forced to say that a substance belongs to a category other than substance. Let s be a primary substance and let D be a differentia said-of s. We can construct the following argument:[20]

(1) D is not a substance, and does not belong to the category of substance.

(2) D is said-of s.

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[19]   ὥστε οὐκ ἂν εἴη οὐσία τῶν ἐν ὑποκειμένῳ. – οὐκ ἴδιον δὲ οὐσίας τοῦτο, ἀλλὰ καὶ ἡ διαφορὰ τῶν μὴ ἐν ὑποκειμένῳ ἐστίν· τὸ γὰρ πεζὸν καὶ τὸ δίπουν καθ' ὑποκειμένου μὲν λέγεται τοῦ ἀνθρώπου, ἐν ὑποκειμένῳ δὲ οὐκ ἔστιν, – οὐ γὰρ ἐν τῷ ἀνθρώπῳ ἐστὶ τὸ δίπουν οὐδὲ τὸ πεζόν. (3a20-25)

[20]   I take it that Ackrill (1963) has an argument like this one in mind on pg. 85ff.

(3) Every entity belongs to one of the ten categories.

∴ (4) D belongs to one of the nonsubstantial categories, call the category C.

(5) If D belongs to C, then C is said-of D.

∴(6) C is said-of D.

(7) The said-of relation is transitive.

∴(8) C is said-of s.

∴(9) There is a substance that belongs to a nonsubstance category.

Since (9) is absurd, we must deny one of the premises.

I would like to begin by making four preliminary points about the argument above. First, this argument assumes that differentiae are entities. I think that this assumption is warranted, and that Aristotle takes anything that can be said-of an entity to be an entity. Second, I assume that Aristotle accepts (3) and takes every entity to belong to a category.

Third, I have some concern about whether Aristotle would accept (5) and (6). I can't think of any passage where Aristotle asserts that the categories are said-of anything in the technical sense. Aristotle does sometimes call the categories 'genera' and it has become traditional to call the categories the highest genera. Since Aristotle generally takes genera to be said-of subordinate genera, we might conclude that he takes the categories to be said-of entities belonging to those categories. However, we might think that the categories represent an exception to this general rule. We might think that the categories do not count as genera in the ordinary sense. Furthermore, even if the categories are genera in the ordinary sense, it isn't clear that they can satisfy the linguistic test laid out in (OF1). Categories will not have definitions, and so will not count as things that have their definitions predicated of anything.[21] They

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[21]   Notice that this same argument can be run against any other candidate for a highest genus. If we provide a definition by pointing to a higher genus and a differentia, then the highest genera have no definitions.

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might, therefore, fail to be said-of anything. If categories aren't said-of anything, then we cannot derive (9). While I do think that these concerns should be noted, the attempt to deny (5) on their basis strikes me as somewhat desperate, and I think that we should accept (5) for the present.[22]

My fourth preliminary point about the argument above concerns the absurdity of (9). We might think that there is something absurd about claiming that any entity belongs to two categories. I share Ackrill's sense that there is something wrong with this possibility. Aristotle spends the majority of the *Categories* telling us how to distinguish entities in one category from those in another. However, Aristotle makes a couple of curious claims in the *Categories* that run counter to the intuition that a thing cannot be in two categories. In the course of discussing the category of quality at 8b25ff, Aristotle mentions states and conditions as types of quality. However, at 11a20 he claims that states and conditions are relatives.

Aristotle considers two solutions to this *prima facie* problem, without finally endorsing either of them. First, he suggests that particular states will be qualities, while the genera of these states will be relatives. For example, knowledge will be a relative while grammar will be a quality and will not be a relative. This solution implies that a genus can belong to a different category than its species, and is inconsistent (given the transitivity of the said-of relation) with the claim that the categories are said-of every entity belonging to the category.[23]

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[22] Notice, that even if someone insists on denying (5), we can recast the argument in other terms. For example, while the category of quality might not be said-of anything, there will be genera in the category of quality that will be said-of things, e.g. state, condition, affection. If a differentia is in the category of quality, one of these will be said-of the differentia. If this differentia is in turn said-of a substance, we end up with an analogue of (9) claiming that a substance is a state, condition or affection.

[23] Notice that Aristotle considers not just holding that grammar is a quality but denying that grammar is a relative. However, if relative is said-of knowledge and knowledge is said-of grammar, the transitivity of the said-of relation requires that relative be said-of grammar. We might use the fact that Aristotle considers this solution to indicate that he doesn't take the categories to be genera in the ordinary sense.

The second solution Aristotle considers is to hold that an entity like grammar might belong to two categories (11a37). By allowing that an entity might belong to more than one category, Aristotle undermines one of our reasons for thinking that he would be troubled by (9). Anyone who thinks that Aristotelian categories are meant to serve as an exhaustive and exclusive division of everything that exists will have to contend with Aristotle's claims at 11a37ff.[24]

Nevertheless, even if Aristotle would allow some entities to belong to multiple categories, we might think that there is something especially problematic about allowing a substance to belong to a nonsubstantial category. The distinction between substance and nonsubstance is of such central importance to Aristotle's ontology that we should be loath to allow that any entity could be both. It is especially problematic that a primary substance would end up being in a nonsubstantial category, since primary substances are supposed to serve only as subjects while other entities are supposed to have further subjects. In what follows, therefore, I will proceed on the assumption that (9) really would be a problem for Aristotle, even if he did not properly appreciate it as a problem.

Therefore, if accepting both (1) and (2) would lead to (9), then we must either deny that differentiae are said-of substance or accept that the differentiae of substances fall in the category of substance. Ackrill suggests that Aristotle accepts (1), and should as a consequence deny (2). According to Ackrill, Aristotle ought to say that differentiae inhere in substances. If differentiae are going to belong to a nonsubstantial category, it is most natural to claim that they are qualities or qualifications. In the

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[24]   Like Ackrill (1963), I do want the categories to serve as an exhaustive and exclusive division of the things that are. I also think that it is problematic to have genera in a different category than their species. Therefore, I think that we need to offer a revisionary reading of this passage. We need to distinguish the possession of a certain intrinsic quality of the soul from bearing the knowledge relation to a certain subject matter. When we talk about grammar being in a subject, there are two things inhering in the subject. There is a quality in the subject's soul as well as a relative.

remainder of this chapter, I want to do a couple of things. First, I want to examine the claim that Aristotle takes the differentiae of substances to be qualities or qualifications.[25] The evidence is indirect, but I will argue that there is some evidence from the *Topics* and *Metaphysics* Δ that Aristotle thinks of the differentiae of substances as qualities. Second, I want to try to offer an account of why Aristotle might have thought of differentiae as qualities. I will suggest that in trying to give an informative definition of a substance Aristotle might have thought that he needed recourse to entities that were not themselves identical to the substances being defined. In short, I will try to present the best case I can for accepting Ackrill's suggested revision of Aristotle.

I will then turn to some arguments against Ackrill's suggestion. I will look at some evidence from the *Categories* that Aristotle thinks about the differentiae of substances in a way that is totally at odds with the way that he thinks about ordinary qualities. Aristotle emphasizes that differentiae of substances meet the conditions laid down in (OF1), and that they do not inhere in substances. Furthermore, I will argue that Aristotle can't take the differentiae of nonsubstances to inhere in their subjects,

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[25] Ackrill uses 'qualification' to translate Aristotle's use of '*poion*' which is used as an interrogative ('how') and as an indefinite adjective ('of a certain nature'), and reserves 'quality' to translate Aristotle's use of the abstract noun '*poiotês*'. Corresponding to the distinction between '*poion*' and '*poiotês*', Aristotle sometimes uses abstract nouns derived from adjectives as the names of qualities. For example, at 9a34 Aristotle tells us that a body is called pale (the neuter adjective '*leukon*' is used) because it has paleness ('*leukotês*' the abstract noun). At other places, I think that Aristotle employs a substantive use of the neuter adjective as the name of the quality. For example, when Aristotle introduces examples of things in the category of *poion*, he uses '*leukon*' and '*grammatikon*'. Furthermore at 2a32-34 Aristotle seems to use '*leukon*' as the name of the entity that inheres in the universal *body*. There are several subtle issues that I am not prepared to go into here. However, I am going to make the following assumptions. Aristotle takes the fact that a body is white to consist in the inherence of a nonsubstantial entity in a substance. The nonsubstantial entity is not identical to the substance in which it inheres. Aristotle sometimes indicates that the entity in question should be called '*hê leukotês*' and sometimes seems to think that it can be called '*to leukon*' or '*to ti leukon*'. On the other hand, Aristotle sometimes seems to think that the use of '*to leukon*' refers not to the nonsubstantial entity that inheres in the substance, but rather to the combination of the substance and the inherent nonsubstance. In any case, Aristotle does not seem to think that there are two different nonsubstantial entities involved in this case. Rather, there is a single nonsubstantial entity that bears the inherence relation to a substance.

since nonsubstantial entities can be the subjects for differentiae, but can never be subjects of inherence. I will end by suggesting an alternative revisionary reading of Aristotle's position on differentiae. I think that Aristotle should continue to accept (2), and will be forced to deny (1). In the end, I think that Aristotle should hold that differentiae are identical with the species and genera for which they are the final differentiae. I think that this revision is in line with some of what Aristotle says in his later works, and that he did eventually adopt a position like the one that I suggest.[26]

I will begin with the question of whether Aristotle takes the differentiae of substances to be nonsubstantial. While Aristotle implies that differentiae are not substances, he does not say explicitly in the *Categories* that differentiae are located in any other category. However, on the assumption that only substances belong in the category of substance, differentiae will have to be located in another category. Furthermore, there are some suggestions in other works that Aristotle takes the differentiae of substances to be in the category of quality. While it is unclear how much weight we can give to these passages in trying to interpret the *Categories*, it might be worth taking a look at some of them.

At *Topics* IV.2, in the course of emphasizing the distinction between differentiae and genera, Aristotle says "…a thing's differentia never signifies what it is (*ti esti*), but rather some quality (*poion ti*), as do walking and two-footed."[27] When Aristotle tells us here that the differentia signifies a quality (*poion ti*), there is some suggestion that he takes the differentiae to be located in a category other than substance.[28] Furthermore, when Aristotle gives examples of differentiae, he uses

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[26]   I revisit this issue in chapter 7.
[27]   *Topics* IV.2, 122b16. I have chosen to translate '*poion ti*' as 'some quality'. Were we to follow Ackrill, we would translate this as 'some qualification'. We should note that Aristotle uses the same term '*poion*' here that he uses as the name of the relevant category in the *Categories*.
[28]   As many have pointed out, the *Topics* and *Categories* differ in their lists of categories. In the *Categories* Aristotle distinguishes quality and the rest from substance (*ousia*), while in the *Topics* (see

neuter adjectives '*to pezon*' (walking or footed—differentiating terrestrial animals from birds and sea creatures) and '*to dipoun*' (two-footed—Aristotle's standard example of the human differentia). Aristotle in the *Categories* sometimes uses the same grammatical form when he gives the names of qualities.[29]

At *Topics* VI.6, Aristotle tells us that substance is wholly incapable of being a differentia of anything (143a33). Furthermore, he tells us that "it seems that the differentia signifies a quality (*poion ti*)" (144a18). Aristotle's claim comes at the end of a discussion about what counts as the proper genus of virtue. We might try to locate virtue in the genus of good and in the genus of state. However, we cannot hold that both are genera of virtue since neither is a genus of the other. Aristotle then argues that state is the proper genus while good is a differentia, on the grounds that state signifies *what* virtue is (*ti esti*) while good signifies *how* virtue is (*poion ti*). Aristotle then concludes with the claim that the differentia signifies some quality (144a18).

It would be hasty to conclude just on the basis of these passages that Aristotle takes the differentiae of substances to signify entities in the category of quality. There are two ways to translate Aristotle's claim at 144a18: "*dokei d' hê diaphora poion ti*." While we might translate the passage to say that the differentia-term signifies an entity in the category of quality, we can also translate the passage as simply saying that in

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Top I.9, 103b21ff) he distinguishes quality and the rest from essence (*to ti esti* literally the what it is). We should keep this distinction in mind when comparing the two texts.

[29] At 2a30ff, for example, Aristotle gives the neuter '*to leukon*' as the name for the quality of paleness, and says that the name is linguistically predicated of body, the name of which is also neuter. In other places, Aristotle uses feminine abstract nouns as the names of nonsubstantial entities. For example, at 1a15 we are told that the name of the quality of bravery is '*andreia*' rather than '*andreion*'. Matters are complicated by the fact that both '*pezon*' and '*dipoun*' also seem to be understood as adjectives that modify the unexpressed neuter noun '*zôon*' ('animal'). At 3a28, Aristotle writes "*pezon gar esti ho anthrôpos*." The mismatch in gender between '*pezon*' and '*anthrôpos*' indicates that the former is not used to modify the latter, but is neuter because it is modifying an understood neuter '*zôon*'. Finally, Aristotle sometimes uses the expression '*to pezon*' to indicate a species of the genus animal—the land animals as opposed to the birds and fish.

giving a thing's differentia we tell someone *how* the thing is rather than *what* it is.[30]

Aristotle gives the term '*poion*' a technical sense in the *Categories* where he uses it as a name of a category of entities, but we need not take the term to have this same technical sense in the *Topics*.

In fact, there is even at least one place in the *Categories* where Aristotle uses '*poion ti*' nontechnically. At 3a10ff, Aristotle distinguishes between primary substances, which are properly said to be "a certain this" (*tode ti*) and secondary substances like human and animal, which signify "some qualification" (*poion ti*). In this passage, it is clear that Aristotle is not saying that secondary substances are located in a category other than substance, but is simply distinguishing the primary substances, which are numerically one, from secondary substances, which are predicated of a plurality of things. Furthermore, Aristotle seems to have a slightly different aim in the *Topics* than the aim that I take him to have in the *Categories*. The aim of the *Categories* is to discriminate among types of entities—we want to distinguish among substances, quantities, qualities, relatives, etc. On the other hand, it is natural to take the *Topics* to be drawing the distinction among various things that we can say about any entity—I can tell you what it is, how it is, how it is quantified, how it is related to other things, etc.[31]

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[30]   Note the use of '*semainein*' here. Aristotle says that the *differentia* signifies something, and not that a linguistic expression like the *differentia-term* signifies something. Aristotle sometimes allows that non-linguistic items signify, but in this case I do not think that there is any harm in taking him to mean that certain terms signify *how* as opposed to *what* a thing is.

[31]   There are two key differences between the *Topics* and *Categories* relevant to the current discussion. First of all there is the fact that in the *Categories*, Aristotle is distinguishing *ousia* from the rest of the categorial items, while in the *Topics* he is distinguishing the *ti esti* (the essence—literally the what it is) from the rest of the categorial items. '*Ousia*' seems to denote substance, where this is thought of as a certain ontologically fundamental type of entity. On the other hand, '*ti esti*' or essence does not seem to denote a sort of entity, but rather to denote the fundamental character of any entity. The second difference between the *Categories and Topics* is closely related to this distinction between *ti esti* and *ousia*. While '*ousia*' applies only to entities that are substances, Aristotle allows that nonsubstantial entities will have an essence. In fact, in the *Topics* passage under discussion, Aristotle is talking about virtues, which he takes to be states rather than substances in the *Categories*. In terms of the *Categories*, a state is a type of quality and not a substance. So a state is not a substance (*ousia*), but is still a thing that *has* an essence (*ti esti*). These differences between the *Categories* and *Topics* make it difficult to

Nevertheless, even if the use of '*poion*' in the *Topics* is not taken to be the name of a category of entities, we can ask how best to interpret the passage in the *Topics* in terms of the ontology of the *Categories*. A natural suggestion would be to hold that Aristotle takes terms for genera and terms for differentiae to signify different entities. 'State' indicates the genus of virtue, while 'good' indicates a differentia of virtue.[32] 'State', 'virtue', and 'good' will indicate three distinct entities. Each of these entities will be located in a category—perhaps both state and good will turn out to be distinct entities in the category of quality.[33]

In a similar way, we might take 'two-footed' and 'animal' and 'human' to indicate three different entities. Human will be in the category of substance, as will animal since we say what a human is by telling someone that it is an animal. When we give the genus or species of a substance, we specify a secondary substance, which Aristotle takes to be an entity in the category of substance. It seems that the genera of an entity will generally belong to the same category as that entity, for example when I tell you what a given quality, like pale, is I mention a more general quality, like color.[34] On the other hand, in giving the differentia we say how something is. If there is an entity indicated by the differentia-term, it seems natural to take this entity to be a sort of quality. If we try to produce a single theory to make sense out of what Aristotle

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take the fact that Aristotle uses '*poion*' in talking about differentia as conclusive evidence that he takes the differentiae of substances to belong to the category of quality.

[32]   Notice that if things that are not states can also be called good, and there is no homonymy involved, we will have a problem with Aristotle's claim at 1b16ff that a differentia can belong to two genera only if one is subordinate to the other. Aristotle does not always seem to respect this condition.

[33]   It turns out to be quite difficult to say which category each of these entities belongs. Aristotle suggests that a state is a sort of condition and that both are types of quality (8b26ff). He also suggests that states and conditions are relatives (11a20ff). Furthermore, Aristotle seems to hold that 'good' does not univocally designate an entity in a single category at all.

[34]   Against this suggestion see *Categories* 11a37ff.where Aristotle indicates that higher genus (e.g. knowledge) will be a relative, while the more specific instance (e.g. grammaticality) will be a quality. This passage is also particularly difficult for my interpretation of the *Categories*. As Ackrill points out in his commentary, claims such as this one are a real threat to the integrity of the ontological scheme of the *Categories*. My view is that we need to offer a revisionary account of what Aristotle says in this passage, as well as a revisionary account of what he says about the differentiae of substance.

says about differentiae in both the *Topics* and the *Categories*, the best option seems to be to take differentia-terms to indicate entities in the category of quality.

Aristotle also indicates that differentiae are a sort of quality in *Metaphysics* Δ.14.[35]

> In one way the differentia of substance is called quality ([*to*] *poion*),
> For example human is such an animal since it is two-footed, and horse
> is such an animal since it is four-footed, and a circle is such a shape
> since it is angleless.[36] So the differentia with respect to substance is
> quality (*poiotêtos*). The differentia of substance then is called a quality
> (*hê poiotês*) in one way. (1020a34-b1)

Aristotle reiterates his claim that the differentia of substance is a quality at 1020b14-15, calling it the primary sort of quality. On the assumption that Aristotle held that differentiae could be located in one of the ten categories, it seems most natural to claim that he thought of them as belonging to the category of quality.

I want to offer a suggestion about why Aristotle might have thought of differentiae as qualities rather than substances, by considering the process of collection and division inherited from Plato and the way in which this process relates to the task of giving proper definitions.[37] Say that we are dividing a certain collection of entities. It seems that a proper pattern of division has the following formal characteristics. Whenever we divide a genus into subordinate-genera, everything that

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[35]   Once again, there is a problem with relying too heavily on a passage from the *Metaphysics* in interpreting the *Categories*. Nevertheless, I think that discussion of quality in *Metaphysics* Δ can shed some light on what Aristotle thinks in the *Categories*. Δ seems to be an earlier work than many of the other books in the *Metaphysics*. Ross, for example, holds that Δ predates many of the physical works, which in turn predate most of the other books of the *Metaphysics*. I lack the space, and expertise, to argue convincingly that Δ is of a piece with the *Categories*. However, I do think that the views of differentiae expressed in the *Categories, Topics* and Δ go together, and that they all seem to predate Aristotle's consideration of metaphysical questions arising from thoughts about the unity of definition.

[36]   In each of these examples I use the expression 'is such a ____' to translate '*poion ti ___*'. Ross translates the same Greek phrase as 'is a ____ of a particular quality'. I have tried to choose a noncommittal translation. Two things are interesting to note about this chapter of Δ. First, Aristotle does call the differentia '*poiotês*' in this passage. So, even if we think that only the use of '*poiotês*' rather than the use of '*poion*' commits Aristotle to the claim that differentiae are in the category of quality, we here have evidence that he thinks of differentiae as qualities. Second, Aristotle seems to slide back and forth between the use of '*to poion*' and '*hê poiotês*' in this passage.

[37]   See especially Plato's *Sophist* and *Statesman*.

is in the original genus is in one of the subordinate genera (the division is exhaustive). Furthermore, the division is exclusive in that no item is in more than one coordinate genus (a genus at the same level of division). Furthermore, proper divisions seem to conform to the following condition: if G and H are distinct genera of F, then either G is a genus of H or H is a genus of G.[38]

We can represent the results of collection and division graphically as a Porphyrian tree, which has the following basic structure. Say that we are collecting and dividing substances. The root node of the tree will be substance. At each subsequent level of the tree we will get subgenera of the immediately superordinate genus. So on the assumption that there are only horses and humans among the land animals, we end up with a tree that has the following structure:

```
Substance
    |
   Body
     |
   Living
      |
    Animal
       |
     Land
     Animal
     /    \
  Human   Horse
  /  \     /   \
Plato Socrates Secretariat Bucephalus
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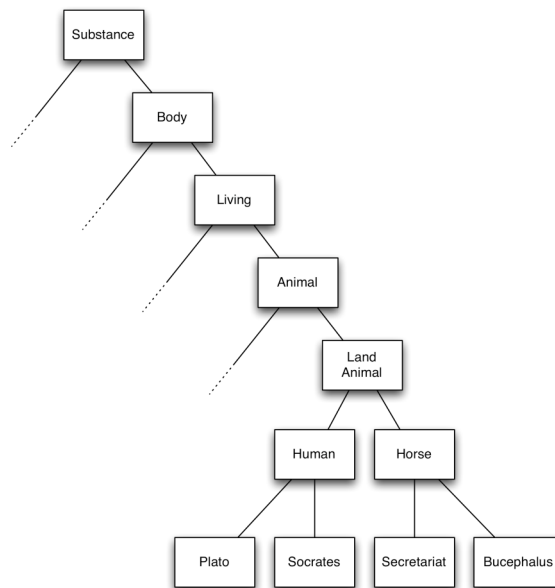
[38] This is the condition that Aristotle relies on in his argument that good is a differentia of and not a genus of virtue at *Topics* 144a9ff. I'm not sure whether this condition has a name, but if we represent the results of collection and division as a Porphyrian tree, this condition guarantees that there is a unique path from the root of the tree to any other point on the tree. Note that this condition is said to govern the genus-of relation, and not the said-of relation. Notice that if this condition were put on the said-of relation, then we could derive a contradiction from the claim that the differentiae of substances are in a category other than substance. Later I will suggest that Aristotle ought to take this condition to apply to the said-of relation, and that he can do so only by identifying differentiae with genera and species.

Imagine that we start out with all the substances grouped together. We want to carve this collection at the joints, and to find the various subordinate genera until we arrive at *infimae species* and finally at the individual primary substances like Socrates or Bucephalus. If our divisions at each stage are to be non-arbitrary, then they must be made in virtue of real features that things have. In trying to divide *land animal* into *human* and *horse*, we need to find some distinction on which to base the division. One possibility is that we simply point out that part of the collection is human and that the other part is equine. Perhaps humanity and equininity are themselves the basic feature in virtue of which we can make the division. It might be uninformative to say that horses are the equine land animals or that humans are human land animals, but perhaps this is the best we can hope for.

Aristotle, however, seems to think that we say something more informative. An Aristotelian definition of a kind will indicate both the immediate genus of that kind and the differentia that distinguishes that kind from all other members of its genus. He holds that there is something that can be added to *land animal*, such that it is identical neither to *land animal* nor to *human*, and which is such that when we add it to *land animal* we get a proper real definition for *human*. This something is indicated by 'two-footed' or 'rational'. It is obvious that the terms 'rational' and 'two-footed' are not identical to the term 'human', but we can ask whether the entity indicated by the differentia-term is or is not the very same entity as the one indicated by the species-term. I suggest that in the *Categories,* and the other texts that I discuss above, Aristotle thinks that the species-term and differentia-term indicate different entities.

However, it then follows from the nature of division that the entity indicated by the differentia-term cannot be a substance. We can get this conclusion by the following argument. Assume, for example, that *rational≠human*. Assume for reductio that 'rational' indicates a substance, and so is genus at some level of division. It can't

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be a coordinate genus with *human* or with any of *human's* superordinate genera, without violating the condition on branching outlined above.[39] *Rational* can't be subordinate to *human*, because then rationality would belong to only part of *human*. It can't be superordinate to *human*, because then it would distinguish more than just humans among the animals (or more than just the animals among a higher genus). But these are the only ways in which anything could be a genus of something in the category of substance. So *rational* cannot be a substance. We must hold that the entity indicated by 'rational' is in another category and deny that it stands in the genus relation to *human*. In terms of the Porphyrian tree, there is just no place on the substance tree for *rational* to go.[40]

A simpler argument can be given for the same conclusion. We want to divide all the substances into the ultimate kinds. However, we want to perform this division on the basis of what the substances are like. But the question, "What is it like?" is answered by referring to a quality. When we say that a thing has a differentia, we do not say what it is, but what it is like. Therefore, the entity corresponding to the differentia-term is a quality and not a substance. Allen Bäck (2000) thinks that Aristotle is led to separate differentiae from substances by the fact that we indicate differentiae in our nominal definitions by adjectives rather than by nouns. Since we indicate the differentiae by adjectives, we should see that they are nonsubstantial attributes rather than substances.[41]

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[39]   This argument generalizes: it can't be the case that both *human* and *rational* are genera to which Socrates belongs, and that neither occurs as a node in the path from Substance to the other. So *rational* cannot be a coordinate genus with any genus superordinate to *human*. Furthermore, if *rational* and *human* are coordinate genera, then there must be something that differentiates *rational* from *human*, and we are on our way to a vicious regress.

[40]   Notice that if Aristotle has something like this reasoning in mind, then he will run into a problem when he gives genus and differentia definitions of qualities. The differentia of a quality is said-of that quality, and so is the genus of that quality. However, neither the genus nor the differentia can be said-of each other. By the reasoning above, the differentiae of qualities are going to be forced of the quality tree.

[41]   On Bäck's view, Aristotle holds that differentiae are in an accidental category and are essentially predicated of substances. Bäck identifies essential predication with the said-of relation, and

I have tried to offer some evidence that Aristotle takes differentiae of substances to be nonsubstantial entities in the *Categories*, and to give a plausible reconstruction for why he might have done so. However, if the differentiae of substances are qualities, it is hard to see how they can be said-of substances given (OF1). Aristotle claims that footed (*to pezon*) and two-footed (*to dipoun*) are differentiae, and that each is said-of human. However, (OF1) then requires that both the name and the definition of the entity indicated by '*to dipoun*' must be properly linguistically predicated of both the species and the individual humans that are members of the species. Aristotle holds that the name of a quality will often fail to be properly L-predicated of a substance, since the gender of the quality name and the gender of the substance name will often fail to agree. However, he recognizes some cases where the name of the substance has the same gender as the name of the quality where we will be able to properly L-predicate the name of a quality of a substance. For example, '*leukon*' which is the name of a quality can be L-predicated of body, since the word for body, '*to sôma*', is neuter.[42] However, the '*leukon*' could not be properly L-predicated of human, since the genders of '*anthrôpos*' and '*leukon*' do not match. When I predicate paleness of a particular man, I use the masculine term '*leukos*' which indicates but does not name the quality. Aristotle takes the neuter '*to dipoun*' to be the name of the quality of two-footedness.[43] Shouldn't he then also claim that the name of the quality will not be properly L-predicated of human, since the name of the latter is grammatically masculine? Furthermore, if two-footedness is a kind of condition or

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holds that both differentiae and propria are said-of their subjects. I disagree with Bäck with respect to propria. Furthermore, while I agree with Bäck that Aristotle does hold that differentiae are nonsubstantial items that are said-of substances, I think that this position is unstable.

[42]   At least this seems to be Aristotle's point in this passage. Later on he seems to indicate that the name of the quality is the feminine noun '*hê leukotês*'.

[43]   Aristotle must think this if what he says next is meant to demonstrate that the name of the differentia is properly L-predicated of the species. There is no passage that I can think of where Aristotle uses a feminine abstract noun like '*hê leukotês*' as the name of a differentia.

state, then won't the definition of '*dipoun*', like that of '*leukon*', also fail to be properly L-predicated of human? However, Aristotle then ought to claim that two-footedness fails to be said-of human. I take the above line of reasoning to be similar to the one that leads Ackrill to claim that Aristotle ought to have taken differentiae to inhere in substances rather than to be said-of substances.[44]

Aristotle, however, explicitly treats the differentia term '*pezon*' in a different way than he treats adjectives for other qualities. He writes "For example, if footed is said of man then the definition of footed will be also be predicated of man; for man is footed (*pezon gar estin ho anthrôpos*)."(3a26-28) In the clause "*pezon gar estin ho anthrôpos*," the gender of '*pezon*' does not match that of '*anthrôpos*'. The mismatch here is explained by the fact that '*pezon*' should be taken as an adjective modifying the unwritten neuter noun '*to zôon*' (animal) rather than as an adjective modifying '*anthrôpos*'. However, if this is the explanation for the propriety of linguistically predicating '*pezon*' of human, then we can ask why we can't extend the same treatment to any other adjective? For example, why can't we linguistically predicate '*leukon*' of human and claim that it is short for '*leukon zôon*'? It might seem unprincipled for Aristotle to treat the two cases differently.

However, I think that we can see a principled reason behind Aristotle's claims if we keep in mind his requirement at 1b16ff that the differentiae of different and nonsubordinate genera are never the same. I have given this condition as (GSD$_{OF}$) above, and it follows from this condition that when I call something footed, it is implied that the thing in question belongs to the animal genus. There is no such implication when I call something pale. Aristotle takes himself to be justified in using "*pezon gar estin ho anthrôpos*," to predicate footed of man because '*pezon*' just means '*pezon zôon*'. I take Aristotle to be relying on something like this fact when he claims

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[44]   See Ackrill (1963) pp85-87.

in *De Interpretatione* 11 that 'two-footed tame animal' indicates a unity in a way that 'white walking man' does not indicate a unity.[45]

It is also interesting to observe that Aristotle sometimes uses '*to pezon*' as the name, not for a differentia, but for a sub-genus of animals—the beasts as opposed to birds and fish.[46] However, if '*pezon*' is the name of a genus, then it seems to be the name of a secondary substance. The word '*pezon*' now seems to be ambiguous between a sub-genus of animals and the differentia by which the genus of animals is divided into subgenera. We might translate the different uses of '*pezon*' as 'terrestrial animal' and 'terrestriality' respectively, understanding that 'terrestriality' means 'terrestrial animality'.

We can then ask whether Aristotle would want to insist that this is a real case of ambiguity—should we hold that there are two different entities indicated when we use '*pezon*' as a differentia-term and when we use it as the name of the genus of beasts? It is difficult to give a definitive answer to this question, but I think that Aristotle ought to say that there is single entity here. Think about two different uses of the word 'human' in English.[47] I can use the word as the name of a certain species of animal, or I can use the word as an adjective. If we follow Aristotle's treatment of other adjectives, we might take the adjectival use of 'human' to indicate without naming the entity named 'humanity'. We might think that 'human' is the name of a species, while 'humanity' is the not the name of the species but is the name of a

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[45] In the *De Interpretatione* passage, Aristotle argues that I make a single assertion when I claim that the two-footed animal is F, but I do not make a single assertion when I claim that the white walking man is F. I take the singularity of the first assertion to rely on the fact that 'two-footed tame animal' indicates a single entity which is then said to be F. On the other hand, 'white walking man' indicates three different entities, and when I claim that the white walking man is F, the truth-maker will involve the inherence of three entities, those indicated by 'white', 'walking' and 'F' in the substance indicated by man.

[46] See 14b33ff also see Ackrill (1963) p86. Where '*pezon*' serves as the name of the genus of land animals '*pezon estin ho anthrôpos*,' (Man is a beast) will be no more grammatically remarkable than '*zôon estin ho anthrôpos*,' (Man is an animal) used to predicate animal of man.

[47] I am individuating words purely orthographically. If anyone thinks that we have two words here with the same orthography, please modify what I am saying accordingly.

property or attribute in virtue of which things belong to the species.[48] If we do draw such a distinction, then we will have two different facts which might be taken to serve as truthmakers for the following sentences:[49]

(1) Socrates belongs to the human species.

(2) Socrates has the feature of humanity.

The truth-maker for the first sentence will consist in the holding of a relation between Socrates and the species, while the truth-maker of the second will consist in the holding of a relation between Socrates and whatever entity is indicated by 'humanity'. However, I do not think that Aristotle accepts the existence of two separate truthmakers in this case. Rather, I think that he would hold that there is a single underlying fact, human's being said-of Socrates, which makes both sentences true.

I suggest that Aristotle ought to treat '*pezon*' in a similar way. There is not one entity that is said-of Bucephalus bears in virtue of which he is a member of the genus of footed animals, and a different entity said-of Bucephalus in virtue of which he possesses the attribute of footedness. Rather there is a single underlying fact here— *pezon* is said-of Bucephalus. The same treatment can be extended to cases where different words are used to indicate a genus or species and to indicate the differentia distinctive of that genus or species. So, for example, we will not have distinct facts in virtue of which it is true to say "Socrates is human" and true to say "Socrates is bipedal."[50] Rather there will be a single entity indicated by 'human' and 'bipedal', and this entity's being said-of Socrates will make both sentence true.

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[48] Alternatively we might have the kind and the property of belonging to that kind as different things.

[49] Notice that (1) is normally expressed in English by "Socrates is *a* human" while (2) is expressed by 'Socrates is human.' I noted above that a single Greek sentence, '*Sôkratês anthrôpos estin*,' would translate each of these English sentences. The question now is whether Aristotle would take the Greek sentence to be truly ambiguous. Are there two different facts that the sentence could be used to express.

[50] This is on the assumption that bipedal animality really is the human essence.

I am aware that my suggestion here involves a revision of Aristotle's view in the *Categories*. Aristotle seems to think that the differentia's being said-of an entity is a fact distinct from the secondary substance's being said-of an entity. However, on the view that I am suggesting, this distinction turns out to disappear.

When I discussed collection and division above, I claimed that in looking for the differentiae in virtue of which a genus is to be divided into species we wanted to find something that was identical neither to the genus to be divided nor to any of the species resulting from the division. Corresponding to this suggestion is the idea that the differentia and genus are both parts of the essence of the species—I reveal part of the essence by telling you the genus and another part of the essence by telling you what the differentia is. However, given that Aristotle doesn't take the differentia to characterize anything outside the genus, it will be redundant to give the genus once I have given the differentia. It seems then that I can reveal the whole essence of the species by revealing the differentia.[51]

What we have here goes beyond coextension or necessary coextension of predicates. A proprium of a kind is an attribute that necessarily characterizes all and only members of that kind. For example, Aristotle takes grammaticality to be a proprium of human beings. Nevertheless, Aristotle denies that we reveal the essence of the species by indicating one of its propria. Furthermore, Aristotle takes propria to inhere in their species. We have two different entities here, grammaticality and human, which are necessarily connected. On the other hand, in holding that the essence of

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[51] Notice that this view is at odds with Aristotle's claims in the *Topics* that revealing the differentia does not reveal *what* something is. On the view that I am suggesting here, revealing the differentia more precisely reveals what the thing is than does revealing the genus. I think that Aristotle accepts a view similar to the one outlined here in *Metaphysics* Z.11. While I do not want to take what Aristotle says in Z as evidence of what he thinks in the *Categories*, I am suggesting that the position Aristotle takes in Z seems to be the natural result of a certain extension of what he says in the *Categories*. To the extent that my reading of the *Categories* is revisionary, I hope that it offers a revision that is Aristotelian in spirit.

humanity is bipedal (animality), I think that Aristotle holds that humanity *just is* bipedal (animality).[52] Ultimately, I think that we can best extricate Aristotle from the difficulties raised earlier in this chapter not by denying that the differentiae of substances are said-of substances, but by recognizing that there is no ontological distinction between differentiae of substances and the species and genera that the differentiae are supposed to help define.[53]

      While any adequate treatment of the text is beyond the scope of this chapter, I think that there is some evidence in *Metaphysics* Z that Aristotle came to have a view like the one that I am suggesting. In his discussion of the unity of definition in Z.12, Aristotle suggests that when division is accomplished properly, the final differentia will be the form and substance of the entity that we are seeking to define (1038a25ff). The specification of the final differentia renders all intermediate differentiae superfluous. When I have told you that human beings are two-footed, I have already told you that they are footed. I have also already told you that they are animals, that they are living corporeal substances. When we represent a properly executed division as a Porphyrian tree, each node will correspond to a real entity. Furthermore, the tree will accurately depict which entities are said-of one another. However, the features that we refer to in dividing a genus into its component species will not refer to entities distinct from the species themselves.

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[52]   We can still hold that defining human as bipedal or rational animal is more informative than defining human as human animal, just as we can say that defining water as H_2O is more informative than defining water as water without holding that there are 'being H_2O' and 'being water' refer to different properties.

[53]   On the revision suggested here, the holding of the said-of relation between a differentia and a species will turn out to be a case of the holding of the relation between a thing and itself.

CHAPTER 3

INHERENCE: A PRELIMINARY CHARACTERIZATION

Section 3.1: Inherence and Individuals

I want to begin the discussion of inherence and nonsubstantial individuals by offering a preliminary characterization of the inherence relation. At 1a24, in the midst of characterizing the entities that are in a subject but not said-of any subject, Aristotle tells us what he means when he claims that something is in a subject. It will be helpful in the discussion that follows to have the relevant passage in front of us:

> Some things are in a subject, but are not said-of any subject—by in a subject I mean what is in something not as a part and which cannot exist separately from what it is in. For example, the individual grammaticality is in a subject, the soul, but it is said-of no subject, and the individual pallor is in a subject, the body—for all color is in (a) body—but it is said-of no subject. (1a23-29) [1]

The most *prima facie* natural way of taking Aristotle's elucidation of his technical sense of the phrase 'in' is the one given by Ackrill in his commentary of the *Categories* (p.74-75). Therefore, I use Ackrill's analysis as a starting point for further discussion.

> (IN) For any x, x is in$_1$ y, if and only if x is in$_2$ y, x is not a part of y, and it is not possible for x to exist apart from y.

A notable problem with (IN) is that the word 'in' is contained in both the *definiens* and the *definiendum*. Ackrill (p.74) suggests that we should take the second 'in', which I render as 'in$_2$', to have a non-technical sense. The sentence, 'x is in$_2$ y' will count as

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[1]   "τὰ δὲ ἐν ὑποκειμένῳ μέν ἐστι, καθ' ὑποκειμένου δὲ οὐδενὸς λέγεται, – ἐν ὑποκειμένῳ δὲ λέγω ὃ ἔν τινι μὴ ὡς μέρος ὑπάρχον ἀδύνατον χωρὶς εἶναι τοῦ ἐν ᾧ ἐστίν, – οἶον ἡ τὶς γραμματικὴ ἐν ὑποκειμένῳ μέν ἐστι τῇ ψυχῇ, καθ' ὑποκειμένου δὲ οὐδενὸς λέγεται, καὶ τὸ τὶ λευκὸν ἐν ὑποκειμένῳ μέν ἐστι τῷ σώματι, – ἅπαν γὰρ χρῶμα ἐν σώματι, – καθ' ὑποκειμένου δὲ οὐδενὸς λέγεται" (1a23-29) I am translating Aristotle's use of '*hê tis grammatikê*' and '*to ti leukon*' as 'the individual grammaticality' and 'the individual pallor' respectively. I will argue that the referents of these phrases are best taken to be nonsubstantial particulars, but for now I intend 'the individual grammaticality' to be as ontologically neutral as possible.

true if and only if an ordinary speaker would accept 'x is in y' or a similar sentence.[2]

Aristotle never gives an explicit characterization of the in_2 relation, but he seems to

think that it holds when there is true linguistic predication, but the thing predicated is

not said-of the subject.[3]

[2]   Ackrill (1963) gives some example sentences: 'x is of y', 'y has x', 'x belongs to y', etc. Some problems with this account are noted by Allen (1969) p 36-37 n 9.

[3]   As a very rough first pass we might try to characterize the in_2 relation as follows: x is in_2 y only if, where terms ⌜α⌝ and ⌜β⌝ indicate entities x and y, the sentence in which ⌜α⌝ is linguistically predicated of ⌜β⌝ is true. We cannot make this claim a biconditional. Aristotle later (3a7-21) recognizes cases in which e.g. 'man' is linguistically predicated of the individual human being, but where "man is not in the individual man". So, mere linguistic predication will not suffice for being in_2 a subject. Aristotle never gives us a more precise way of recognizing when one thing is in_2 another, since he never explicitly says anything about the in_2 relation. However, I think that Paul Grice's distinction between 'IZZing' and 'HAZZing' might be useful here—see Grice (1988), Code (1983), also see the discussion of Grice, Code and Aristotle on S. M. Cohen's website: http:// faculty.washington.edu/smcohen/433/GriceCode.pdf.

        Aristotle explicitly contrasts the relation that a thing has to its essential attributes with the relation that a thing bears to its accidents. Grice suggests that we can mark this distinction linguistically, by using a different term to say what a thing is than we use to say that a thing has an accident. So: *Socrates IZZes human*, but *Socrates HAZZes pallor*. I take Aristotle to be pointing to a distinction like Grice's at 3a12-15. "As for secondary substances, it is clear that they are not in a subject. For human is said-of the individual human, but it is not in a subject. For man is not in the individual man." Aristotle tells us that human is not *in* a subject. He then justifies this claim by claiming that human is not *in* a particular human. I take Aristotle's argument in this passage to trade on the same ambiguity of 'in' noted by Ackrill in his discussion of the definition of inherence at 1a24-25. I take Aristotle to be arguing from the fact that human is not in_2 the individual human, to the conclusion that human is not in anything in the technical sense. Furthermore, I take his claim that human is not in the individual human to rely on the observation that when we call the individual man human we do not indicate an attribute that she has, but say what she is. If this is right, then the non-technical in_2 might correspond to Grice's relation of HAZZing. I do not mean to suggest here that 'HAZZing' picks out a different relation that 'inherence'. Rather, I take it that inherence is the fundamental relation that corresponds to HAZZing. In a case where a thing HAZZ an attribute, the underlying truthmaker will consist in something's inhering in a substance.

        The case with IZZing is a little more complicated. In any case where we have a true case of IZZing, we will have a universal being said-of a subject. However, I am reluctant to say that when we say, e.g. "Socrates is human", the ultimate truthmaker is the fact that the said-of relation holds between human and Socrates. I do not think that Socrates is human by bearing a relation to anything else. Rather, Socrates being human is a purely nonrelational fact about Socrates. I think that we have two distinct facts: Socrates' being human and the universal human's being said-of Socrates. Socrates' being human partially explains the fact that human is said-of Socrates, rather than the converse. I discuss these issues further in chapter 10.

        I do not think that 'IZZing' and 'HAZZing' correspond to relations distinct from inherence and the said-of relation in terms of which the latter are to be explained. Nevertheless, I think that Aristotle takes us to have intuitions about differences between statements that reveal the essence of a thing and statements that assert a relation between different things. These intuitions are correct because the former sorts of statements involve the said-of relation and the latter involve the inherence relation.

Given this understanding of (IN), it seems that Aristotle must hold that entities, which are in$_1$ individuals, are themselves individual. For, given (IN), it follows that if a given entity is in an individual substance, then that entity could not exist without that very substance. On the assumption that individual substances can exist in the absence of one another, it follows that an entity that inheres in one individual substance does not also inhere in any others. For example, if x inheres Socrates, then x cannot also inhere in Callias. It seems that Socrates could cease to exist, while x continued to inhere in Callias, in which case x would be able to exist apart from Socrates.[4] Therefore, an entity that inheres in one individual must be numerically distinct from any entity that inheres in a distinct individual. The pallor in me can be of the same type as the pallor in someone else, but cannot be numerically identical to that pallor. Since Aristotle clearly takes some entities to inhere in individual substances, he must accept the existence of nonsubstantial individuals—entities that inhere in a single individual substance on which they are ontologically dependent.

By a similar line of reasoning, Aristotle will have to maintain that universal accidents can only be in universal subjects.[5] Furthermore, the subject in which a universal accident inheres will have to be such that the accident could not exist in the absence of that substance. For example, white can be in body, since if body did not exist white would not exist. White cannot, however, be in snow, since snow could cease to exist without white's ceasing to exist.

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[4]   Strictly speaking, something might be in both Socrates and Callias if it is the sort of thing that would cease to exist were either Socrates or Callias to cease to exist. However, any attribute which we want to say belongs to Socrates and Callias, and which is such that Callias could continue to have the attribute in the absence of Socrates, cannot belong to Socrates and Callias in virtue of the inherence of a single entity in both Socrates and Callias.

[5]   I assume that there are no "impure" universals, which are universals that of necessity belong to one and only one individual. Take, for example, a universal that belongs to something only if that thing is Socrates or bears a certain relation to Socrates. This is "impure" in that the specification of the nature of the universal requires reference to particulars, as opposed to a pure universal the specification of which requires no mention of an individual. For more on pure and impure universals, see Armstrong (1978) and Armstrong (1989).

Directly after his definition of inherence, Aristotle gives us two examples of entities that inhere in a subject but which are not said-of any subject.[6] There are several reasons to take Aristotle to be indicating particulars rather than universals in these examples. The grammatical form of both 'the individual white' ('*to ti leukon*') and 'the individual grammaticality' ('*hê tis grammatikê*'), mirrors the form that Aristotle uses to refer to the individual man ('*ho tis anthrôpos*') or to the individual horse ('*ho tis hippos*') at 1b4-5. The indefinite pronoun, '*tis*', is used in the latter examples to emphasize the individual nature of the entity being referred to—Aristotle is talking about a particular human being rather than the species *human*. It seems likely, therefore, that '*tis*' is also being used to designate particulars at 1a25-28.

Finally, in a passage immediately following the four-fold division of entities, Aristotle indicates that entities like the individual grammaticality and individual pallor are indivisible and numerically one.

> Things that are indivisible and numerically one are, without exception, not said-of any subject. But nothing prevents some of them from being in a subject, the individual grammatical knowledge is among the things that are in a subject." (1b6-9)[7]

In talking about the things that are indivisible (*to atoma*) and numerically one (*hen arithmô*), Aristotle includes both individual substances and individual nonsubstances. There is every indication that Aristotle takes these entities to be equally indivisible and equally numerically one. The nonsubstantial individual seems to be an individual in the same way in which an individual substance is individual. But a primary substance seems to be individual by being a non-repeatable, numerically singular, particular entity, rather than by being something of which there can be multiple instances. *Hê tis*

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[6]   I use the term 'definition' for Aristotle's claims at 1a24-25. However, I do not want to suggest that Aristotle is trying to find more fundamental relations in terms of which to define the relation of inherence. Once again, I take Aristotle to be characterizing a piece of his technical vocabulary in terms that he thinks the reader already grasps.

[7]   ἁπλῶς δὲ τὰ ἄτομα καὶ ἓν ἀριθμῷ κατ' οὐδενὸς ὑποκειμένου λέγεται, ἐν ὑποκειμένῳ δὲ ἔνια οὐδὲν κωλύει εἶναι· ἡ γὰρ τὶς γραμματικὴ τῶν ἐν ὑποκειμένῳ ἐστίν.(1b6-9)

grammatikê, therefore, should also be taken to be a nonrepeatable, numerically singular, particular entity, rather than to be something multiply instantiable.[8]

I take the preceding discussion to establish that there is some *prima facie* reason to believe that Aristotle is committed to the existence of what I will call 'Nonsubstantial Particulars' ('NSPs' for short). An NSP is a nonsubstantial entity, which cannot belong to more than one primary substance. Furthermore, it is essential to an NSP that it belong to the primary substance to which it belongs.

There is evidence that Aristotle accepts the existence of NSPs, both in the *Categories* and in other works of Aristotle. First, there is the evidence internal to the *Categories* that I have already reviewed. (IN) seems to be the most natural way of taking 1a24-25, and, on the assumption that primary substances are subjects of inherence, (IN) entails the existence of NSPs. In subsequent chapters, I will examine some alternative interpretations of 1a24-25 which do not entail the existence of NSPs. I will argue against these alternatives and will attempt to establish that Aristotle must take on the ontological commitments entailed by (IN). On the most natural construal the '*ho tis*' locutions used by Aristotle in the *Categories*, therefore, he is referring to NSPs. In subsequent chapters, I argue against the alternative view that Aristotle uses '*ho tis*' locutions to refer to determinate universals, the view that, for example, '*to ti leukon*' refers to a fully determinate shade of white.[9] Similarly, Aristotle's calling an entity 'indivisible' and 'numerically one' strikes me as incompatible with his holding that that entity can have a plurality of instances. In subsequent chapters, I argue against attempts by opponents of NSPs to hold that something other than a particular

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[8]   Some, e.g. Devereux, in "Inherence and Primary Substance in Aristotle's *Categories*" (1992), and Wedin, in "Nonsubstantial Individuals" (1993), take the fact that a nonsubstance is numerically one and atomic to settle the issue, and imply that it is a non-repeatable property instance. Others, most notably Owen, in "Inherence" (1965), and Frede, in "Individuals in Aristotle" (1978), disagree and hold that numerical oneness and atomicity can belong to entities that are multiply instantiable.

[9]   See Owen (1965), For denials that '*to ti leukon*' can refer to something that can be in a plurality entities while remaining numerically one, see Devereux (1992) and Wedin (1993) and (2000).

can be indivisible and numerically one. [10] A second source of evidence that Aristotle accepts NSPs comes from passages external to the *Categories*.[11] Most importantly, I argue that Aristotle's account of alteration in the *Physics* involves nonsubstantial particulars. By taking Aristotle to accept the existence of NSPs, we can give a unified account of the ontology of truthmaking and the ontology of alteration.

Section 3.2: Problems With (IN)

There is, however, a major problem with the claim that (IN) is the correct reading of 1a24-25. Aristotle claims that the inherence relation holds between entities in cases where the right-hand side of (IN) seems clearly to be violated. The first place where such a tension appears is within the four-fold division passage itself. When Aristotle discusses entities that are both said-of a subject and in a subject he uses the universal *knowledge* as an example, "For example, knowledge (*hê epistêmê*) is in a subject, the soul (*tê psuchê*), and it is said of a subject, grammatical knowledge (*grammatikê*)."(1b1-3) In this passage '*hê epistêmê*' refers to the universal *knowledge*, and Aristotle refers to the subject in which *knowledge* inheres by '*tê psuchê*', the same phrase he uses to indicate the subject in which the individual grammaticality (*hê tis grammatikê*) inheres at 1a26. However, the universal *knowledge* cannot be said to

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[10]   For example, see Frede (1978) pp 52-55. Frede thinks that '*atomos*' and '*hen arithmô*' will characterize any entity that is not said-of a subject. This class can include both individual substances, Socrates, and '*to ti leukon*, which Frede does not take to be an NSP. What Frede thinks about the status of the nonsubstantial entities, which are indivisible and one in number, is not clear to me. I think that he agrees with Owen in taking them to be fully determinate sub-specific universals. However, Frede might take 'universal' to apply only to entities that are predicable of a subject, in which case the entities at issue here are neither NSPs nor universals. Devereux (1992) denies the importance of the definition of inherence. He thinks that the definition of inherence does not imply the existence of NSPs, but that other textual evidence shows that Aristotle accepts them. Most of Devereux's evidence comes from considerations about Aristotle's use of '*atomos*' and '*hen arithmô*', which Devereux claims cannot have the meaning that Frede attaches to them. In addition, Wedin (1993) offers a detailed argument that, based on passages in the *Categories* and *De Int*, we cannot take '*atomos*' and '*hen arithmô*' to have the sense Frede needs them to have.

[11]   Heinaman, in "Nonsubstantial Individuals in the *Categories*" (1981), points to a number of passages which are best understood on the assumption that Aristotle accepts nonsubstantial particulars. I choose to focus on the *Physics* passages because Aristotle's thoughts about alteration are of central importance in his philosophy, and because an account of Aristotle's ontology which unifies his thoughts about change with his thoughts about predication would be useful.

inhere in a particular soul at 1b1-3, since *knowledge* could exist separately from a particular soul. So '*hê psuchê*' must be taken to refer to the universal *soul* at 1b1-3. If we take '*hê psuchê*' to refer to a universal in 1b1-3, then perhaps we should take it to refer to the same thing in the 1a26 passage, especially since Aristotle uses the '*ho tis*' locution to indicate individuality at several places in the latter passage.[12] However, if we take '*hê psuchê*' to refer to a universal at 1a26, then the individual grammatical knowledge has not been said to be in a particular soul, but to be in a universal. On this interpretation, the example does not commit us to holding that the individual grammaticality is an NSP. Alternatively, if we take '*hê psuchê*' to refer to something particular in both passages, then Aristotle is holding that the universal *knowledge* is in an individual soul. Since *knowledge* can exist apart from a particular soul, Aristotle's example is then inconsistent with the analysis of inherence given by (IN).

The best response to this argument for the defender of (IN) would be to hold that '*hê psuchê*' is being used in one passage to refer to a particular soul and in the other passage to refer to the universal *soul.* While this might not be the most elegant way to integrate the passages, Aristotle does use definite article-noun pairs both to refer to particulars and to refer to universals. So this passage does not seem decisive against (IN). There are, however, far more problematic passages in which Aristotle clearly states or implies that a universal can be in a particular substance, or that a universal accident can be in a universal subject on which it does not existentially depend. I turn to these passages now.

At 3a1-6 Aristotle writes:

> As the primary substances stand to everything else, so the species and genera of the primary substances stand to all the rest: all the rest are predicated of these. For if you call the individual human grammatical it

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[12]   This argument is developed more fully in Frede (1978), pp59-61.

follows that you will call both human and animal grammatical; and similarly in other cases. [13] (3a1-6)

In this passage, Aristotle tells us that we can predicate of a species and genus whatever we predicate of an individual member of that species or genus. This passage will pose a problem, if it commits Aristotle to the claim that Socrates' being white entails the inherence of the universal white in the secondary substances human and animal. Since the universal white can exist without man and animal, the inseparability condition of (IN) would be violated. In response, the proponent of (IN) must claim that something can be predicated of the species without inhering in the species. If we opt for this kind of response, however, we must deny that one thing is predicated of another only if it is either said-of or inherent in the first. We might, for instance, claim that some instances of white inhere in some instances of animal, and that this suffices for the white's being predicated of animal, without holding that the inherence relation holds between white and animal. [14]

However, even if 3a1-6 does not commit Aristotle to a problematic claim that a universal accident inheres in an inappropriate universal substance, he seems to commit himself to such a claim in the following passage from the *Topics*.

Moreover, see if the given genus is said to be in the species as a subject, just as white is in the case of snow. So that it is clear that it would not be the genus. For the genus is only said-of the species as a subject. [15] (127b1-4)

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[13]   "ὡς δέ γε αἱ πρῶται οὐσίαι πρὸς τὰ ἄλλα πάντα ἔχουσιν, οὕτω τὰ εἴδη καὶ τὰ γένη τῶν πρώτων οὐσιῶν πρὸς τὰ λοιπὰ πάντα ἔχει· κατὰ τούτων γὰρ πάντα τὰ λοιπὰ κατηγορεῖται· τὸν γὰρ τινὰ ἄνθρωπον ἐρεῖς γραμματικόν, οὐκοῦν καὶ ἄνθρωπον καὶ ζῷον γραμματικὸν ἐρεῖς· ὡσαύτως δὲ καὶ ἐπὶ τῶν ἄλλων." (3a1-6)

[14]   We might take Aristotle to be claiming only that e.g. the truth of 'Socrates is pale' entails the truth of 'Man is pale', without committing himself to any view about the structure of the truthmaker underlying the truth of 'Man is pale'. In fact, the truthmaker for 'Man is pale' might simply be the inherence of one or more instances of pallor in one or more individual men. I discuss cases like this one at length in chapter 8. In this case, while we accept that the inherence relation holds between individual pallors and individual men, we deny that a further inherence relation holds between the universals.

[15]   "Ἔτι εἰ ἐν ὑποκειμένῳ τῷ εἴδει τὸ ἀποδοθὲν γένος λέγεται, καθάπερ τὸ λευκὸν ἐπὶ τῆς χιόνος, ὥστε δῆλον ὅτι οὐκ ἂν εἴη γένος· καθ' ὑποκειμένου γὰρ τοῦ εἴδους μόνον τὸ γένος λέγεται." My attention was called to this passage by Matthews (1989).

At this point in the *Topics*, Aristotle is discussing a number of tests to figure out whether one has correctly specified the genus of a species. He argues that white can't be the genus of the species snow on the grounds that white inheres in snow, while no genus inheres in its species. In this passage, Aristotle indicates that the universal *white* inheres in the universal *snow*. However, since *white* could exist even if *snow* did not exist, this is a case where (IN) seems to be violated. The proponent of (IN) might deny that Aristotle is using 'in' in the technical sense in this passage. However, it is interesting to note that Aristotle is asking whether the genus is '*en hupokeimenô tô eidei*' which recalls the technical sense of 'in a subject'. Furthermore, he contrasts being in a subject with being said-of a subject, which might indicate that he has inherence and the said-of relation in mind in this passage.

I turn now to the most problematic passage for the proponent of (IN), and the passage that has received the most attention from the critics of (IN). At *Categories* 2a34ff, Aristotle writes:

> All the other things are either said-of the primary substances as subjects or are in these subjects. This is clear from an examination of each case. For example, animal is predicated of human, and therefore also of the particular human; for if it were predicated of none of the particular humans, neither would it be predicated be human at all. Again, color is in body, and therefore also in the individual body; for if it were not in some of the particulars, neither it would not be in body at all. Therefore, all the other things are either said-of the primary substances as subjects or are in these subjects.[16] (2a34-b5)

The claim that all other things are either said-of or in primary substances clearly implies that every nonsubstantial universal must either be said-of, or inhere in,

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[16]   "τὰ δ' ἄλλα πάντα ἤτοι καθ' ὑποκειμένων λέγεται τῶν πρώτων οὐσιῶν ἢ ἐν ὑποκειμέναις αὐταῖς ἐστίν. τοῦτο δὲ φανερὸν ἐκ τῶν καθ' ἕκαστα προχειριζομένων· οἷον τὸ ζῷον κατὰ τοῦ ἀνθρώπου κατηγορεῖται, οὐκοῦν καὶ κατὰ τοῦ τινὸς ἀνθρώπου, – εἰ γὰρ κατὰ μηδενὸς τῶν τινῶν   ἀνθρώπων, οὐδὲ κατὰ ἀνθρώπου ὅλως. – πάλιν τὸ χρῶμα ἐν σώματι, οὐκοῦν καὶ ἐν τινὶ σώματι· εἰ γὰρ μὴ ἐν τινὶ τῶν καθ' ἕκαστα, οὐδὲ ἐν σώματι ὅλως· ὥστε τὰ ἄλλα πάντα ἤτοι καθ' ὑποκειμένων τῶν πρώτων οὐσιῶν λέγεται ἢ ἐν ὑποκειμέναις αὐταῖς ἐστίν." (2a34-b5)

a primary substance. But, since no nonsubstance universal can be said-of a primary substance, all nonsubstance universals must inhere in primary substances. However, this claim clearly violates the inseparability condition of (IN). To make matters worse, Aristotle goes on to directly state that the nonsubstantial universal color is in an individual body.

So we are in a bit of a mess. (IN) seems to be the most natural *prima facie* reading of 1a24ff. However, some passages seem clearly to contradict (IN), and the principle of charity should militate against ascribing contradictory beliefs to Aristotle. In my discussion of different ways of trying to resolve this problem, I will concentrate on the conflict between the definition of inherence at 1a24-25, and the statement that universals are in particulars at 2a34ff. If we can find a way to resolve this conflict, we should be able to modify it to resolve the other conflicts mentioned above. Before outlining the various ways of dealing with the conflict between 1a24-25 and 2a34ff, I want to discuss an essential assumption that underlies the claim that such a conflict exists.

Section 3.3: Making Explicit An Underlying Assumption

I have claimed that Aristotle's discussion of inherence at 1a24 as (IN) seems to be inconsistent with his claim at 2a34ff that a universal can be in a primary substance. It is interesting to note, however, that these passages are inconsistent only on the assumption that it really is possible for a nonsubstantial universal to exist separately from a particular substance in which it inheres. There is a view on which Aristotle could maintain (IN) and could still hold that universal accidents inhere in primary substances. Assume that Callias and Socrates are both pale. Socrates' pallor (an NSP) is in Socrates, and Callias' pallor (a different NSP) is in Callias. If universals are sets of NSPs, and the existence of a set depends on the existence of its member, then there will be no contradiction in claiming that the universal pale inheres in Socrates. Since

pale could not exist without Socrates' white and Socrates' pallor could not exist without Socrates, pale could not exist without Socrates. Alternatively, take universals to be mereological sums of NSPs, and assume that mereological essentialism is true.[17] Pale is the mereological sum of all the NSP pallors, and could not exist in the absence of any of these parts. The inseparability condition of (IN) will now be met in the case of the pale and Socrates. Furthermore, pale is in_2 Socrates, and is not a part of Socrates. Therefore, white is in_1 Socrates.

In order to get a conflict between 1a24-25 and 2a34ff, therefore, we have to assume that the relation between universal and particular accidents is not purely extensional. Nevertheless, this assumption seems to be pretty reasonable. Aristotle seems to think that universals are entities that can endure through time, and survive the destruction of their particular instances. It seems essential to Aristotle's view of science that certain facts about universals are eternally true even while particulars are relatively ephemeral. Say that Socrates is ill at t1 and healthy at t2. It seems clear that Aristotle takes the universal sickness at t1 to be identical to the universal sickness at t2. But Socrates' sickness (an NSP) no longer exists at t2.[18] Therefore, the universal sickness cannot be the sort of entity whose existence depends on that of the individual sicknesses.[19]

While I do not think that it is plausible to attribute a purely extensional understanding of the said-of relation to Aristotle, I do think that it is important to recognize that such an understanding would render what Aristotle says at 1a24-25 and

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[17] By "mereological essentialism", I here mean the view that if α is the mereological sum of $\beta_1, \ldots, \beta_n$, then α is essentially the sum of $\beta_1, \ldots, \beta_n$, and that α, therefore, exists in no world where any of the βs fails to exist.

[18] We are assuming in this example that other individuals are sick at t2. Aristotle holds that sickness exists only if there are some sick individuals.

[19] Nor do I think it is plausible to hold that Aristotle takes a universal to be the set or sum of all its past present and future instances. Aristotle seems to think that universals can come into and go out of existence, and it seems to me that such a view is incompatible with taking a universal to be composed of past, present and future instances.

2a34ff consistent. Furthermore, I will suggest later that there is a close connection between Aristotle's view of the relation between particulars and universals, and the part-whole relation. I think that Aristotle is somewhat conflicted about whether the relation between universals and particulars is extensional, and I think that conflicting intuitions about this relation lead Aristotle to claim that nonsubstantial universals inhere in particular substances.

Section 3.4: Three Basic Types of Solution

In chapters 4-8 of this work, I examine the conflict between 1a24-25 and 2a34 in detail, and, in the course of this examination, I develop an interpretation of Aristotle's ontology in the *Categories.* I begin by surveying some of the existing attempts to resolve the seeming conflict between 1a24ff and 2a34ff. To think about matters purely schematically, there are three ways of reconciling 1a24-25 and 2a34ff. First, we could reinterpret 1a24-25, and claim that Aristotle does not there commit himself to the claim that if x inheres in y, then x cannot exist without y. If x's inherence in y doesn't entail that x is existentially dependent on y, then it will be perfectly fine for Aristotle to claim that color is in a particular body at 2a34. Second, we can accept (IN) as the right interpretation of 1a24-25, but deny that Aristotle really commits himself at 2a34ff to the claim that a universal inheres in a particular. Third, we could take Aristotle to assign different senses to the occurrences of 'in' in 1a24-25 and 2a34ff. We could accept that Aristotle is committed to the claim that if x is in y (in the 1a24 sense) then x can't exist without y, and accept the claim that color is in (in the 2a34 sense) a particular body the non-existence of which would not entail the non-existence of color. We will simply deny that these senses of 'in' are identical.

Each of these strategies exercises the principle of charity. Furthermore, each of these strategies holds that Aristotle would take what he says at 1a24-25 and 2a34ff to be true upon careful reflection on the content of his statements. In the chapter 4, I

discuss attempts by Michael Frede and G. E. L. Owen to reinterpret 1a24-25. Both Frede and Owen deny that Aristotle accepts nonsubstantial particulars, and claim that Aristotle takes the entities that inhere in a subject without being said-of any subject to be fully determinate universals. I argue that these attempts at reinterpretation should be rejected on both textual and philosophical grounds. In chapter 5, I argue that we can find independent reasons in support of the claim that Aristotle accepts nonsubstantial particulars in the analysis of alteration put forward in *Physics* I. Insofar as Aristotle is committed to NSPs independently of the *Categories*, the motivation to avoid reading 1a24-25 in a way that avoids these commitments is lessened. In chapter 6, I argue against Terence Irwin's suggestion that we reinterpret *Categories* 2a34ff, and James Duerlinger's and Michael Wedin's attempts to hold that Aristotle uses 'in' ambiguously.

In the end, I think we are forced to hold that Aristotle makes a mistake in his claims at 2a34, and think that, on further reflection, Aristotle would have taken what he says at 2a34ff to be false.[20] In this regard I follow Ackrill (1963). However, I do not think that Aristotle is simply being, in Ackrill's words, "compressed and careless". Rather, I think that he is led to make his claims at 2a34 by some of his views about the relation between particulars and universals, and I think that trying to understand how Aristotle arrives at his claim at 2a34 might help us better understand the overall ontological picture of the *Categories*. In chapter 7, I examine the relation between universals and particulars, and argue that it is a kind of whole-part relation. I argue that Aristotle's view about universals can be seen as an attempt to steer a middle course between nominalism and Platonism about universals. Aristotle holds that universals are constituted by particulars, but that they are not identical to mereological sums of particulars and can survive changes in their parts.

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[20]   Additionally, I think that Aristotle would also have to deny what he says at *Topics* 127b1-4.

In chapter 8, I turn to the question of why Aristotle claims that nonsubstantial universals inhere in substantial particulars in the *Categories.* I suggest that there are three things going on. First, Aristotle seems to be torn between reductionism and realism about universals. The further he pushes his claim that universals are nothing beyond particulars, the more he seems committed to the position that all facts about universals can be reduced to facts about particulars. However, insofar as Aristotle thinks that scientific claims involve truths about universals that do not reduce to claims about particulars, he recognizes that one universal's inhering in another is not reducible to inherence relations between particulars. Second, Aristotle recognizes different sorts of predication. One type of predication allows us to construe predicating something of a universal subject extensionally, in terms of predicating something of some or all the instances of that universal. However, Aristotle also recognizes some varieties of predication—*kath' hauto* and *katholou* predication—where predicating something of a universal cannot be reduced to predicating something of particulars. While Aristotle's statements about inherence at 2a34ff would follow if he had understood inherence in terms of the first sort of predication, there is good reason for him to understand inherence in terms of the second sort of predication. Third, Aristotle is concerned at 2a34 to emphasize the ontological priority of primary substance. He attempts to secure this ontological priority by making primary substances immediate subjects for all other entities. However, I argue that Aristotle doesn't need this strong a claim to ensure the ontological priority of his primary substances.[21]

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[21]   I turn to a fuller discussion of ontological priority in chapters 9 and 10.

CHAPTER 4

ALTERNATIVE INTERPRETATIONS OF *CATEGORIES* 1a24-25

Section 4.1: Overview

In this chapter, I discuss Michael Frede's and G.E.L. Owen's attempts to

reconcile Aristotle's conflicting statements about inherence.[1] Owen and Frede each try

to eliminate the apparent inconsistency between 1a24-25 and 2a34ff by offering

analyses of the definition of inherence at 1a24-25 that differ from the analysis given

by Ackrill.[2] Each alternative analysis is supposed to allow a universal accident to

inhere in an individual substance. Therefore, the definition on inherence cannot imply

that x is in y only if x cannot exist without y. However, it is precisely this implication

of the definition of inherence which served as a crucial bit of evidence that Aristotle

accepts NSPs. Therefore, in giving an analysis of 1a24-25 consistent with 2a34, this

type of solution does away with one of our main supports for thinking that Aristotle

accepts NSPs. It should be stressed that the existence of NSPs is not ruled out by an

alternative interpretation of 1a24ff. However, Owen and Frede both claim that NSPs

can be ruled out of Aristotle's ontology on independent grounds.[3] In what follows, I

examine the alternative interpretations of 1a24-25 offered by Owen (*Section 4.2*) and

Frede (*Section 4.3*). I argue that each of these alternatives faces serious difficulties. In

Section 4.4, I offer some arguments against the alternative ontology proposed by both

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[1]   G.E.L. Owen "Inherence" (1965), and Michael Frede "Individuals in Aristotle" (1978).

[2]   This is the analysis given as (IN) in the preceding chapter.

[3]   Some proponents of this type of solution to the conflict between 1a24-25 and 2a34ff still
accept the existence of NSPs. They nevertheless hold that the definition of inherence at 1a24ff does not
entail that only NSPs can be in a particular substance. Devereux (1992) resolves the conflict by offering
an analysis of inherence that does not require NSPs, but argues that Aristotle is committed to the
existence of NSPs on other grounds. See also Wedin (1993) and (2000). It is unclear whether Wedin
means his "improved orthodox" view as an alternative interpretation of 1a24-25.

Owen and Frede. Frede and Owen both claim that Aristotle does not accept the existence of NSPs, and both hold that Aristotle takes accidents which are said-of no subject to be fully determinate universals. However, I argue that if an entity is a universal, then it meets Aristotle's criteria for being said-of its instances. There turns out to be no room in Aristotle's ontology for the sorts of entities that Frede and Owen say inhere in a subject but are not said-of any subject.[4]

Section 4.2: Owen's Interpretation

In "Inherence" (1965), Owen claims that 2a34 provides decisive evidence against (IN) as an interpretation of 1a24-25. Let's reformulate (IN) as follows:

(IN) $\forall x \forall y$[x is in$_1$ y if and only if
(a) x is in$_2$ y &
(b) x is not a part of y &
(c) Necessarily(x exists $\supset$ y exists)].

Since, Owen claims, Aristotle clearly allows for cases of inherence that violate (IN.c), (IN) is a poor choice to render Aristotle's claim at 1a24ff. It might be helpful to look more carefully at the wording of Aristotle's claim at 1a24-25:

By in a subject, I mean what is in something, not as a part, and cannot exist separately from what it is in. (1a24-25)

ἐν ὑποκειμένῳ δὲ λέγω ὃ ἔν τινι μὴ ὡς μέρος ὑπάρχον ἀδύνατον χωρὶς εἶναι τοῦ ἐν ᾧ ἐστίν.

[E]n hupokeimenôi de legô ho en tini mê hôs meros huparchon adunaton chôris einai tou en hôi estin.

Owen suggests that '*tou en hôi estin*' at line 25 does not refer back to '*tini*' in line 24. Accordingly Owen proposes that we take (a) and (b) in (IN) to be governed by a different quantifier than (c). As a first pass, therefore, let's attribute the following interpretation of 1a24-25 to Owen:

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4   I do not mean to deny that Aristotle accepts fully determinate universals. I think that both *infimae species* in the category of substance and most specific kinds in the other categories will be fully determinate universals. However, even a fully determinate universal will be said-of something, and Frede and Owen assign these entities to the wrong class within the four-fold division of the *onta*,

(IN$_O$) $\forall x \forall y$ [x is in$_1$ y iff
(a) x is in$_2$ y &
(b) x is not a part of y &
(c) $\exists z$ (x exists $\supset$ z exists)].[5]

(IN$_O$) does not conflict with the claim that the universal *color* is in a particular body. *Color* is in Socrates' body in the non-technical sense of 'in', *color* is not a part of Socrates' body, and there is something, the universal *body*, such that color could not exist if it did not.

Of course, (IN$_O$) does not by itself preclude the existence of NSPs. Take a case where y is an individual and y=z. In such a case, x would be an NSP. Owen, however, claims that there will be no such cases, and he makes two additional moves in fleshing out his interpretation of the ontology of the *Categories*. First, he offers two independent logical arguments against the existence of NSPs.[6] Second, he provides an alternative account of the kind of entities which are in a subject, but which are not said-of any subject.

In examining Owen's view, we need to answer three questions. First, how plausible is (IN$_O$) as a rendering of 1a24-25? Second, how much force do his logical arguments against NSPs have? Third, how plausible is it to populate Aristotle's ontology with the entities Owen suggests as an alternative to NSPs?

To answer the first question: It seems difficult to justify Owen's reading of the definition of inherence. I think that '*tou en hôi estin*' in line 25 is most naturally taken to refer back to the '*tini*' in line 24, and that it strains the passage a bit to deny that the

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[5]   (IN$_O$.c) is only a first pass, and, as we will see below, I do not think that it turns out to be the best way to render Owen's claim that the two clauses in Aristotle's definition are governed by different quantifiers. Owen writes "[Aristotle's definition] can be read as saying 'Z is in something…and Z could not exist without this thing to contain it' but it can equally well be read as saying 'Z is in something…and Z could not exist without something to contain it'." (Owen, 257/104). So Owen does connect the thing on which Z existentially depends to something that Z inheres in. The second clause in Owen's statement is still ambiguous with respect to quantifier placement.

[6]   Both arguments are found in Owen (1965) p 101. Discussions can be found in Moravcsik (1967), Allen (1969), and especially Wedin (1993) and (2000). While initially developed independently, my discussion of the logical arguments has much in common with Wedin's.

terms co-refer, or to claim that are to be rendered by variables that are bound by different quantifiers. Second, even if we do not think that '*tou en hôi estin*' refers back, (c) is not a good way of rendering what Aristotle actually says. He is not merely saying that the inherer existentially depends on something, but that the inherer existentially depends on something it is in. So, at the very least (c) needs to be amended to (c*).

(c*) x cannot exist without being in something.

However, (c*) is itself ambiguous between two ways of fixing the scope of the quantifier with respect to the 'cannot'. Is there supposed to be something such that x is in it, and cannot exist without being in it? Or is it just the case that x cannot exist without being in something or other? The two readings roughly correspond to:

(c*1) $\exists z((x \text{ is in } z)$ & Necessarily(x exists $\supset$ z exists)).

(c*2) Necessarily((x exists) $\supset \exists z(x \text{ is in } z)$).

Owen holds that for any universal accident, there is a universal subject that we can specify such that the accident is in that universal subject and could not exist without being in that subject. For example, *color* cannot exist without *body* and *knowledge* cannot exist without *soul*. So we can take the stronger (c*1) as expressing Owen's intention. The whole definition then is:

(IN$_O$) $\forall x \forall y$ x is in$_1$ y iff
(a)   (x is in$_2$ y) &
(b)   (x is not a part of y) &
(c*1) $\exists z$ ((x is in z) &   (x exists $\supset$ z exists)).

However, there is still a problem with the amended version of (IN$_O$). Even if we allow that there are not grammatical grounds sufficient to require taking '*tou en hôi estin*' to refer back to '*tini*', it is difficult to take '*adunaton chôris einai tou en hôi estin*' to introduce a *bare* existential quantifier, and to mean something like 'unable to exist separate from *something* that it is in'. It is more natural to take the phrase as

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meaning either 'unable to exist separated from *whatever* it is in', or 'unable to exist separated from *the* thing which it is in'. However, we then get (c**) or (c***) as alternative readings for (c*).

(c**) $\forall z ((x \text{ is in } z) \supset (x \text{ exists} \supset z \text{ exists}))$.

(c***) $Iz ((x \text{ is in } z) \& (x \text{ exists} \supset z \text{ exists}))$.[7]

However, neither of these interpretations will allow a universal to inhere in something on which it is not existentially dependent. Since (c***) has the additional disadvantage of going against Aristotle's claims that whatever is in the individual is also in the species and the genus, (c**) seems like a more likely candidate. However, if we take (c) as (c**) we are right back to (IN). In short, there does not seem to be a plausible way to take '*tou en hôi estin*' at 1a25 in a way that yields Owen's reading of the definition of inherence.

So much for my objections to Owen's suggested alternative interpretation of 1a24-25. I now turn to his two logical arguments against NSPs. The first logical argument is the "paradox of the breakdown of the categories", in which Owen claims that all NSPs will be in the category of relatives (*ta pros ti*). Owen argues in the following way. If Socrates' pallor is an NSP, then Socrates' pallor will be the pallor of Socrates. But if Socrates' pallor is properly called the pallor *of* Socrates then Socrates' pallor will satisfy the definition of a relative in chapter 7 of the *Categories* , since relatives are those things which are said to be just what they are *of* or *than* something.

There are a few problems with Owen's argument here. First, the problem that Owen raises for NSPs will beset any account of subject and accident since accidents are accidents *of* subjects.[8] Second, there is the fact that Aristotle retracts the

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[7] 'Ix ...' means there is a unique x such that ....

[8] While accidents will not all be relatives in the technical sense of relatives discussed in *Categories* 7, Aristotle does think that all accidents are *relational entities* in that it is essential to accidents that they bear a relation to the substances in which they inhere. I discuss relational entities at

sufficiency of his linguistic test for relatives at 8a35. He allows that some things can be said to be what they are *of* or *than* something without being relatives. Third, when Aristotle distinguishes relatives from other accidents, he holds that they are said to be what they are *of* or *than* a correlative that reciprocates. Slave and master are given as examples of correlatives, as are greater and smaller, owner and property. A slave is a slave *of* a master, and a master is a master *of* a slave. Something greater is greater *than* something smaller, and something smaller is smaller *than* something greater. Correlatives stand in a symmetrical relation of ontological implication, since the existence of each entails the existence of the other. If an entity is a relative, then so is whatever that entity is said to be what it is *of* or *than*. However, the dependence of accident on substance is not symmetrical. Aristotle holds that relatives are even more ontologically dependent entities than other accidents. Every accident depends on a subject, but relatives additionally depend on things other than the subjects in which they inhere. In addition to depending on its subject, a relative will depend of its correlative and on the subject of its correlative. Aristotle has the resources to distinguish relatives from other accidents, even if he accepts NSPs. Therefore, it is not the case that accepting NSPs forces us to claim that all accidents are in the category of relatives. We can accept NSPs without suffering a breakdown of the categories.

Owen calls his second logical argument "the paradox of implication." He worries that:

> If X is an individual, the statement that a particular Y (say a particular color) is in X will not entail but actually preclude saying that Y without qualification is in X. You ask me what color there is in Socrates' body: I reply meticulously "Socrates' pink". You may find this to some extent uninformative; but when I try to isolate the informative element for you I founder. If I say "The color in Socrates' body is pink", the dogma rules out what I say as ill-formed. Alternatively, 'pink' may be

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some length in chapter 10, and distinguish them from things that belong to the category of relatives (*ta pros ti*).

supposed to stand for a different color with each different individual subject. (Owen 1965, pp. 101-102)

It is difficult to see exactly what Owen is driving at with this objection. The proponent of NSPs will hold that Socrates' pink is in Socrates' body. Furthermore, since the universals *pink* and *color* are said-of Socrates' pink, it is true to say that the color in Socrates' body is pink and is a color. It is true that according to (IN) neither the universal color nor the universal pink can *inhere* in Socrates' body. However, Owen seems to assume that the truth of the sentence "The color in Socrates' body is pink" or "Socrates is pink"[9] requires *pink* to inhere in Socrates. No rational proponent of (IN) is going to accept this assumption. The fact that makes true a claim like "The color in Socrates' body is pink," is the fact that the universal pink is said-of the NSP-color that inheres in Socrates.[10] Owen's argument, therefore, depends on an assumption that will be rejected by any proponent of the view he criticizes.

The same sort of controversial assumption underlies Owen's claim that, according to (IN), 'pink' will stand for a different color in reference to each individual object.[11] Owen holds that the analysis of "Socrates and Callias are the same color," requires that the color inhering in Socrates be the same as the color inhering in Callias. The proponent of NSPs will agree with this claim, but will accuse Owen of confusing numerical with specific sameness. Socrates and Callias will have numerically distinct instances of color, but these instances will be of the same type. Two NSPs will be of

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[9]   It seems that Owen could make a stronger case with the second of these sentences. 'The color in Socrates' body' is easily taken by the proponent of NSPs to denote an individual instance of color. The subject in this sentence is then easily taken to be a member of various kinds in the same way Socrates is a member of various kinds. The relation that underlies the truth of this predication is said-of relation. The second sentence poses more of a problem if we hold that the predicate term denotes the universal *pink*, and hold that the truth of a sentence $\ulcorner \alpha$ is F$\urcorner$ requires that the item denoted by the predicate term either inhere or is said-of the item denoted by the subject term. The proponent of (IN) is going to deny this assumption.

[10]   I argue in chapter 10 that this is not quite right. The instance of pink in Socrates is not pink *because* the universal is said-of it. Rather the universal is said-of it *because* of its intrinsic nature.

[11]   See Owen (1965) p 102.

the same type if and only if a single universal is said-of both of them.[12] Assuming that pink is a fully determinate shade, all bodies that are called pink will have NSPs of the same color species inherent in them, and they will each, therefore, be pink. What they will fail to share is the same NSP, a different particular will inhere in each of them. Nothing prevents many objects from containing NSPs of the same species, just as nothing prevents there from being several individual men belonging to one species.[13] Neither of Owen's logical arguments is successful in showing that Aristotle cannot make sense of NSPs.

There is one additional argument that Owen includes within his discussion of the paradox of implication, but which I think might be developed into an independent argument. Owen claims that NSPs will make a hash out of Aristotle's views on negation.

> [Aristotle] knew an argument that could be turned against it [i.e. the claim that 'pink' stands for different entities when predicated of different substances]. It is an academic argument reported by Alexander, pretty certainly from Aristotle's early essay *On the Ideas* (*Peri Ideôn*) (Alex. *In Meta.* 81 12-18). 'When a man denies something of a number of things his denial must refer to something single: for in saying "man is not white, horse is not white…" he is not denying some separate thing of each of them—he refers to one and the same thing. For what holds good in asserting holds good in denying too.'…If I say that you are one of the people in whose eyes there is no green I am not saying that your eyes lack the green proprietary to them [i.e. an NSP]: *ex hypothesi* there is no such green. Nor, therefore, does the contradiction of my statement mention any proprietary shade of green. (Owen 1965, p102)

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[12]   I argue in chapter 10 that Aristotle accepts a theory on which the resemblance of the instances explains the fact that a single universal is said-of both of them, rather than *vice versa*.

[13]   If it would be absurd to claim that 'man' means a different thing when applied to Callias and Socrates, then it is just as absurd to hold that 'pink' must mean something different when Socrates is called pink due to Socrates' pink, and Callias is called pink due to Callias' pink. The NSPs in Callias and Socrates are specifically the same, and numerically different.

It is not difficult to see how Owen's opponent might attempt to reply to this objection. Once again the difference between numerical and specific sameness can be exploited. Neither the horse nor the man in the example has an inherent color that white can be said-of. For example if the horse is gray and the man tan, then there will be a gray instance in the horse and a tan instance in the man. The universal white is said-of neither of these. In a similar way the lack of green in my eyes is to be analyzed as the inherence in my eyes of a non-green color instance—an instance that green cannot be said-of. So the NSP view does not have to talk about any non-existent NSPs.[14]

Owen's interpretation of 1a24-25 is not particularly plausible, nor are his logical arguments particularly compelling. Nevertheless, Owen's interpretation has the advantage of rendering 1a24-25 consistent with 2a34ff. Furthermore, Owen might argue that he has a superior account of the entities that are in a subject but said-of no subject. We need, therefore, to examine Owen's proposed ontology to see whether it really fares better than the one that he rejects, on interpretative and philosophical grounds. In brief, on Owen's view, the entities in question are fully determinate types in each of the accidental categories. So, 'to ti leukon' refers to a fully determinate shade of a light color, and there are no more determinate shades that to ti leukon can be said-of. However, there is nothing to prevent one and the same determinate shade from belonging to several individual bodies, so to ti leukon can inhere in a plurality of bodies. Owen's interpretation allows a neat analysis of the truthmakers for linguistic predication in terms of the inherence and said-of relations. Take an instance of linguistic predication ⌜α is F⌝, where 'F' indicates but does not necessarily name a

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[14]   In responding to this line of objection, we start to get into tricky issues about how Aristotle handles negation. Here I simply sketch the kind of reply that a proponent of NSPs might give to this objection, and try to show that Owen has not obviously reduced the view to absurdity. Furthermore, it is interesting to note that Owen's view can be made to face a similar objection. Take the scenario envisioned by Aristotle in which nobody is sick. Sickness does not then exist. Now deny that Fido is sick. The universal does not exist. So how is the negation to be handled? Whatever answer Owen gives to this question could be modified to fit the criticism that Owen raises for the proponent of NSPs.

universal, say *x*, and $\ulcorner\alpha\urcorner$ indicates some entity (either universal or individual) *y*.[15] $\ulcorner\alpha$ is F$\urcorner$ is true iff either *x* inheres in *y* as a subject or *x* is said-of *y* as a subject.[16] As we will see later, the sort of interpretation that I favor will require us to tell a more complicated story about the relation between linguistic predication and the inherence and said-of relations.

Nevertheless, I think that the ontology that Owen attributes to Aristotle runs into both interpretative and philosophical problems. Since Michael Frede attributes the same sort of ontology to Aristotle in his interpretation of the *Categories*, it will be best to put off a discussion of the problems faced by such an ontology until after a discussion of Frede's interpretation of 1a24-25.

Section 4.3: Frede's Interpretation of 1a24-25

Like Owen, Frede interprets the definition of inherence at 1a24-25 in a way that does not entail the existence of NSPs. Also like Owen, Frede thinks that the entities that inhere in subjects are generally multiply-instantiable. Nevertheless, Frede's reading of 1a24-25 differs from Owen's in several ways. It will be helpful to begin our discussion by getting clearer on Frede's view.

To this point, I have been assuming, along with Ackrill and Owen, that at 1a24-25 Aristotle is giving an account of what it is for an accident to stand in the

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[15] Duerlinger seems mistaken to claim, in "Predication and Inherence in Aristotle's *Categories*" (1970) pp188-189, that Owen's fully determinate shades are not universals. Duerlinger assumes that anything which is said-of nothing cannot be a universal, and cites *De Interpretatione* 7.17a39-b2 in support of this claim. However, it seems that the *De Interpretatione* passage requires only that universals must (by their nature) be predicated of a number of things ('*ho epi pleionôn pephuke katêgoreisthai*'). Normally when Aristotle is talking about the said-of relation he uses '*kath' hupokeimenou legatai*,' and he often uses '*katêgorein*' without '*kath' hupokeimenô*' to indicate predication in a less technical sense which would include inherence. So the *De Interpretatione* passage alone should not be taken to rule out the existence of universals that are not said of anything, provided these universals inhere in more than one thing.

[16] Frede's account also has this advantage, and Frede explicitly defines inherence by reference to linguistic predication and the said-of relation. Any view holding that only NSPs can be in individual substances will have to give different accounts for truthmakers of linguistic predication. For example, we will have to say that 'a is F' is true iff either the thing signified by 'F' is said-of the thing signified by 'a' or is said-of something that inheres in the thing signified by 'a'.

relation of inherence to a subject. Both (IN) and (IN$_O$) reflect this assumption, and give us conditions under which any two entities, *x* and *y*, stand in the *relation* of inherence. Frede rejects this assumption, and suggests that Aristotle is trying to give us conditions under which a given entity has the *indefinite relational property* of being in something or other. In other words, Frede takes Aristotle to be giving conditions under which any entity is such that there is some entity in which it inheres.[17] Compare giving conditions under which *x* is the father of *y* to giving conditions under which *x* is a father.

We can look again at Aristotle's language at1a24-25: "*[E]n hupokeimenôi de legô ho en tini mê hôs meros huparchon adunaton chôris einai tou en hôi estin.*" Frede agrees with the traditional interpretation (*contra* Owen) that '*tou en hôi estin*' refers back to '*tini*', but holds that neither of these refers back to '*hupokeimenôi*' in 1a24.[18] Accordingly, Frede suggests the following reading of 1a24-25:

> (IN$_{F1}$) x is in something as its subject, if *and only if* there is a subject y such that
> (a) x is not a part of y, and
> (b) x cannot exist independently of y.[19]

We need to note two additional points about (IN$_{F1}$). First, Frede tells us that the parthood involved in (a) is *conceptual* as opposed to *material* parthood. Second, Frede claims that his analysis is superior to others because it allows us to do without any occurrence of 'in' in the *definiens*. I will discuss each of these points in turn.

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17   Frede is not alone here. Gareth Matthews (1989) supports Frede's reading and claims that the ancient commentator Ammonius took Aristotle this way as well. According to Ammonius and Matthews, Aristotle is attempting at 1a24-25 to give us conditions under which a given entity is an accident as opposed to a substance. To be an accident just is to be a thing that inheres in something.
18   Frede (1978), p61.
19   See (D) in Frede (1978), p62. Frede omits the 'only if', and thus seems to be providing only sufficient conditions for a thing's inhering in a subject. However, Frede's own discussion often suggests that he takes himself to be giving necessary and sufficient conditions for a thing's membership in the class of accidents. See Matthews (1989) for more discussion on this point.

In addition to the relation of material parthood which I take to be the relation that holds between a cat and its tail, Frede talks about two other parthood relations recognized by Aristotle: 'subjective parthood' and 'conceptual parthood'.[20] In *Metaphysics* Δ.25, Aristotle writes:

> The elements in the formula which explains a thing are parts of the whole; this is why the genus is called a part of the species, though in another sense the species is part of the genus.[21] (1023b22-25 trans. Ross)

Frede's conceptual parthood and subjective parthood correspond to the two senses of 'parthood' under discussion in the above passage. Frede gives the following definition of subjective parthood:

(SP)   *x* is a subjective part of *y* if and only if *y* is said-of *x*.[22]

Species are parts of their genera in the sense that they are subjective parts of their genera.[23] Furthermore, Frede defines what it is for an entity to be an individual—to be indivisible (*atomos*) and numerically one (*hen arithmôi*)—in terms of subjective parthood. An entity is an individual if and only if that entity has no subjective parts. According to Frede, therefore, when Aristotle claims that this pallor is individual he means only that it is not said-of anything. However, such an individual entity might inhere in a plurality of particular subjects.

The genus and differentia are *conceptual* parts of the species. The species is defined in terms of the genus and differentia, and these are parts of the account of

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[20]   By "material parthood" I mean the relation that we normally take to hold between composite physical entities and their physical parts, e.g. animals and their organs, or cars and their carburetors.

[21]   "ἔτι τὰ ἐν τῷ λόγῳ τῷ δηλοῦντι ἕκαστον, καὶ ταῦτα μόρια τοῦ ὅλου· διὸ τὸ γένος τοῦ εἴδους καὶ μέρος λέγεται, ἄλλως δὲ τὸ εἶδος τοῦ γένους μέρος."

[22]   Frede (1978), 54. Differentiae are also said-of species. So, by Frede's definition (SP) the species is a subjective part of the differentia. However, while Aristotle does claim that the species is part of the genus, I don't know of any passage where he claims that the species is also part of the differentia.

[23]   In chapter 7, I further examine the nature of the parthood relation that Aristotle thinks individuals and subordinate universals stand in to their genera.

what the species is.[24] Frede claims that Aristotle's discussion of parts of substances at

3a29-32 concerns *conceptual* parts of substances, and that it is natural to read 1a24-25

as dealing with the same sorts of parts.[25] Keeping this in mind, we can amend (IN_{F1}) as

follows:

> (IN_{F1*}) x is in something as its subject, if *and only if* there is a subject y
> such that
> > (a) x is not a *conceptual* part of y, and
> > (b) x cannot exist independently of y.

Frede thinks that the point of Aristotle's discussion at 1a24-25 is to distinguish the

class of accidents from the class of substances. Most of the work is supposed to be

done by clause (b). For example, Frede writes:

> There is no particular person, no one subject of the species man, to
> whom one could point and say that the species could not exist without
> this person. The same is true of the genus animal. The genus requires
> species and individuals as subjects to exist. None of these subjects,
> though, is so privileged that one could say of it, without it the genus
> could not exist.[26]

Species do not depend on any individual member of the species, and genera do not

depend on any particular one of their sub-species. According to (IN_{F1*}), therefore,

genera and species cannot be entities that inhere in something. On the other hand, for

each of the accidents that does inhere in something, we will be able to specify some

subject, a substantial universal, such that the accident could not exist without that

subject. For example, the universal color could not exist without the universal body.

According to Frede, clause (a) in (IN_{F1*}) is needed to rule out one problematic

case. Differentiae do not inhere in anything. Rather differentiae are said-of the species

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[24] There is some danger of a confusion of use and mention here. Aristotle tells us that one type of part is "what is in the account/formula that makes clear each thing" (*ta en tôi logôi tôi dêlounti hekaston*). The name of the genus is part of the formula of the definition of the species. However, I take Aristotle to think that this fact about words is grounded in some fact about the nature of the entities referred to by the words. 'Animal' is part of the formula of definition of human, because what it is to be a human is to be an animal of a certain kind.

[25] I argue below that Frede's reading of 3a29-32 is untenable. I agree with him, however, that it is best to take 1a24-25 and 3a29-32 to involve the same sort of parthood.

[26] Frede (1987) p59.

and the individuals in those species. However, differentiae are the sorts of things where we can specify a single subject upon which they are existentially dependent. For example, the universal rational could not exist without the species universal human. Clause (b), therefore, will not rule out the claim that a differentia inheres in something. Clause (a) will rule out this problematic case, since differentiae are conceptual parts of their species.

Frede does not give a clear definition of conceptual parthood, and it is not quite clear how we ought to define the relation. I think that there are two possibilities. First, we might hold that conceptual parthood is the converse of subjective parthood.

(CP$_1$) x is a conceptual part of y if and only if x is said-of y.

One possible problem with (CP$_1$) is that it allows species and genera to be conceptual parts of individual substances, and it is unclear whether Aristotle would hold that an individual substance is the sort of thing that has conceptual parts.[27] As an alternative, we might require that an entity have a definition if it is to have conceptual parts.

(CP$_2$) x is a conceptual part of y if and only if x is part of the definition of y.

Presumably the sorts of definitions involved here will be *real* and opposed to *nominal* or *conceptual* definitions, and the conceptual parthood relation will hold between entities and not between representations of entities.

If we construe conceptual parthood as (CP$_2$), then (IN$_{F1}$) will face a series of counterexamples. For example, every primary substance will be an entity that inheres in something. Take Socrates as an example. There is an entity, say the universal human such that Socrates cannot exist without it. Furthermore, since Socrates does not have a definition, human isn't a conceptual part of Socrates according to (CP$_2$). So, if

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[27]   In fact I think that Aristotle does take the same relation to hold between individuals and their species as holds between species and their genera—viz., the said-of relation. Perhaps the misgivings expressed in this passage result from the choice of the word 'conceptual'.

(CP_2) is right, then (IN_{F1}) entails that primary substances inhere in something.[28] But this is an absurd result. Frede could avoid the above argument by holding that conceptual parthood is to be understood as (CP_1). Let's assume for the time being, therefore, that Frede intends (CP_1) as the definition of conceptual parthood.[29] (IN_{F1}) is, therefore, equivalent to:

> (IN_{F2}) x is in something as its subject, if *and only if* there is a subject y such that
> > (a) x is not said-of y, and
> > (b) x cannot exist independently of y.

However, (IN_{F2}) is still susceptible to a number of counter-examples. The species human will turn out to be in a subject, since it cannot exist without the differentia rational and is not said-of rational. Rational will also turn out to inhere in something, since it cannot exist without the universal animal, and rational is not said-of animal.[30] Furthermore, any particular entity that we can find which is existentially dependent on another particular will turn out to be inherent in something according to (IN_{F2}). For example, Socrates is existentially dependent on the sun and the earth, neither of which are said-of Socrates.[31] Finally, we will have all sorts of cases where substance universals turn out to be things that inhere in something. Take the universal body.

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[28] Heinaman (1981) p303 brings a similar case against Frede. Heinaman's counter-examples are misguided, however. Heinaman tries to saddle Frede with the consequence that individuals are in their species and genera, and in so doing fails to recognize that Frede is not defining the relation *x is in y*, but the relational property *x is in something*. The same point goes against Heinaman's claim that *Topics* 127b1-4 counts against Frede's reading of 1a24-25. The *Topics* passage claims that *white* is in *snow*. Heinaman says that this contradicts Frede's interpretation of 1a24-25 which Heinaman takes to entail that *white* is in *snow* only if *white* cannot exist without *snow*. Heinaman badly misinterprets Frede by holding that Frede's account has this entailment. This is *precisely* the sort of entailment that Frede finds problematic for (IN) and is *precisely* the sort of entailment that Frede's definition avoids.

[29] We will see in a moment that this assumption can be dropped, since Frede's analysis requires amendment on any construal of conceptual parthood.

[30] Heinaman (1981) also notes this sort of problem for Frede's definition, although he seems mistaken in taking Frede to define a relation rather than a relational property.

[31] Wedin (1993) and Wedin (2000) bring up a similar point, noting that every particular is dependent on the unmoved mover.

Since every body must have a shape, body could not exist unless shape existed. But shape is not said-of body. So, according to (IN_{F2}), body inheres in something.

Each one of these counter-examples to (IN_{F2}) can be dealt with by a single amendment to (IN_{F2}). In fact, Frede may intend the amended definition and simply have been careless in the presentation of his view. However, we will see that the amended definition cannot claim to be superior to (IN) on grounds of non-circularity. (IN_{F2}) requires that y be a subject, but is not explicit in requiring that y be a subject for x. If we amend (IN_{F2}) to make this requirement explicit, we get:

> (IN_{F3}) x is in something as its subject, if *and only if* there is a subject y such that
>   (a) *y* is a subject for *x*, and
>   (b) *x* is not a conceptual part of *y,* and
>   (c) x cannot exist independently of y.

The addition of (IN_{F3}.a) dissolves all of the counter-examples mentioned. Human isn't shown to inhere in anything, since rational isn't a subject for human. Likewise, animal is not a subject for rational, the sun and the earth are not subjects for Socrates, and shape is not a subject for body. In addition, the amended definition will not be subject to the counter-example that led us to define conceptual parthood as (CP_1) rather than as (CP_2). The species human is not a subject for Socrates. Therefore, even if human is not part of Socrates' definition and is a thing Socrates could not exist without, it will not follow that Socrates inheres in anything.

Nevertheless, if we accept (a) as an amendment, we can ask where in the text of 1a24-25 we find evidence that Aristotle holds (a). The only possible answer is that Aristotle puts forward this condition by saying that inherers are what are '*in something* not as a part'. So the first occurrence of 'in' in Aristotle's *definiens* is doing some work after all, and cannot simply be omitted. For his analysis to be plausible, therefore, Frede must give up on the claim that his definition is less circular than its competitors. Of course, he is entitled to claim that the first occurrence of 'in' is non-

technical just as Ackrill does in presenting (IN). What about the second occurrence of 'in' in the *definiens*? Does Frede's account fare better than (IN) by being able to eliminate this occurrence of 'in'? I do not think so. Any interpretation, including (IN), which holds that '*tou en hôi estin*' is anaphoric, and has its reference fixed by '*tini*' can paraphrase away the second occurrence of 'in' in the *definiens*.[32]

I take (IN$_{F3}$) to be the best formulation of Frede's view. How plausible is (IN$_{F3}$) as an interpretation of 1a24-25? There are two issues that need discussion. First, how plausible is Frede's contention that Aristotle is talking about conceptual parts in this passage? Second, how plausible is Frede's contention that Aristotle is defining a relational property rather than a relation? Let's look at each of these questions in turn.

Frede's interpretation of 1a24-25 in terms of conceptual parthood is exegetically strained as we can see from a closer examination of some of the very passage that Frede takes to support his view.[33] Contrary to Frede's claim, the mention of parthood at 3a29-32 is most naturally construed as referring to ordinary material parthood rather than to conceptual parthood. We can begin by examining how Aristotle sets the stage for 3a29-32.

The discussion in 3a29-32 occurs within the context of a more general discussion beginning at 3a7, in which Aristotle attempts to show that no substances inhere in any subject. From 3a7-21 Aristotle argues that neither primary nor secondary substances are in a subject, and attempts to establish that it is a necessary condition for an entity's being a substance that it does not inhere in any subject. From 3a21-28, Aristotle argues that the failure to be in a subject is not a feature peculiar to

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[32]   If I am right in my arguments against Owen, he *cannot* paraphrase away the second occurrence of 'in' since he does not take '*tou en hôi estin*' to be anaphoric, but takes the phrase to introduce a new quantifier.

[33]   For a defense of the conceptual parts reading, see Frede (1978), 60-62. For additional criticism, see Heinaman (1981) and Devereux (1992). Wedin (1993) & (2000) also reject Frede's conceptual parthood reading.

substances, but that this feature also belongs to differentiae. Aristotle, therefore, holds that an item's not being in any subject is not sufficient for that item's being a substance. At 3a29 Aristotle takes up a worry about his claim at 3a7-21 that no substance is in a subject. He worries that accepting such a condition will force us to deny that the parts of substances are substances, even though these parts of substances *are* correctly classified as substances.

It might be helpful to look more closely at Aristotle's argument at 3a7-21, since it is extremely compressed and seems at first glance to be blatantly question begging. Aristotle attempts to defend the claim that substances don't inhere in anything. Let's call this claim (SDI). Here is what Aristotle says in defense of (SDI):

> It is a characteristic common to every substance not to be in a subject [(SDI)]. **(a)** For a primary substance is neither said-of a subject nor in a subject. **(b1)** And as for secondary substances, it is obvious at once that they are not in a subject. For man is said-of the individual man as subject but is not in a subject: man is not *in* the individual man. Similarly animal is also said-of the individual man as subject but animal is not *in* the individual man. **(b2)** Further, while there is nothing to prevent the name of what is in a subject from being sometimes predicated of the subject, it is impossible for the definition to be predicated. But the definition of secondary substances, as well as the name, is predicated of the subject: you will predicate the definition of man of the individual man, and also that of animal. No substance, therefore, is in a subject [reiteration of (SDI)]. (3a7-21; Ackrill's translation and italics, my section headings)

Aristotle breaks his defense of (SDI) into two parts. Neither (a) nor (b1) appears at first to be an argument. Instead it seems as though Aristotle is simply reasserting the point that he is trying to establish. In both cases, however, I think that Aristotle is presenting a compressed argument for his claim. In (a), I take Aristotle to be making the point that primary substances are always metaphysical subjects and that nothing is ever a subject for a primary substance. Since an item can inhere in something only if that thing is a subject for it, and nothing is the subject for a primary substance, primary substances cannot inhere in anything.

As Ackrill claims in his commentary and signals by use of italics in his translation, (b1) also contains an argument for the claim that secondary substances do not inhere in any subjects. Aristotle realizes that secondary substances do have primary substances as subjects, but he claims that the relation between secondary substances and these subjects violates the definition of inherence given at 1a24-25. In (b1), I take Aristotle to claim that secondary substances are not *in* a subject in the non-technical sense of 'in'. Therefore, secondary substances fail to meet the criteria for inherence.

As Ackrill notes, it is not completely clear what Aristotle means to capture with the non-technical sense of 'in'. It cannot simply be the case that x is in y iff it is true to say that y is x, since Aristotle thinks that it is true to say that the individual man is (a) man, and that the individual man is (an) animal, but false to say that *man* and *animal* are in the individual man even in the non-technical sense of 'in'. Even if we are uncertain about the precise application conditions for the non-technical sense of 'in', it seems clear that Aristotle relies on this non-technical sense of 'in' to rule out the claim that secondary substances are inherent in a subject. [34]

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[34]   On the interpretation that I favor, Aristotle means to use the in and of distinction to mark a difference between relational and non-relational predication. I discuss this issue further in chapter 10. Here is the point that I take Aristotle to be trying to make: take any accident, *a*, of Socrates. The truth of 'Socrates is *a*' consists in the holding of a relation between Socrates and an entity that is distinct from Socrates—this relation is inherence. On the other hand, the truth of 'Socrates is human' is ultimately grounded in the nature of Socrates himself. No entity distinct from Socrates need be countenanced. On the other hand, the universal human is a thing that has Socrates as a part while Socrates exists, and the universal human's being said-of Socrates consists in Socrates being a certain kind of part of the universal. When Aristotle claims that the universal man is not *in* the individual man, he means that the individual man and human are not distinct in the way that the individual man and his accidents are distinct, and that this sort of distinctness is a precondition both for the non-technical use of 'in' and for the holding of the inherence relation which ultimately grounds nonessential predication. An instance of pallor is a thing that can be in Socrates. On the other hand, when we talk about an instance of humanity, this isn't something that is in Socrates. Rather this just *is* Socrates. While inherence is grounded in a relation between distinct entities, the said-of relation is ultimately grounded in identity. The relation between the universal human and Socrates is a kind of whole-part relation, and the relation between Socrates and the instance of humanity involved in his being human is identity. See also Matthews and Cohen (1968) Grice (1988), Code (1983).

At (b2), Aristotle offers a further argument that secondary substances do not inhere in anything. Once again the argument is somewhat compressed. Aristotle argues that because the definitions of secondary substances are predicated of primary substances, secondary substances do not inhere in these primary substances. Aristotle relies on a few subsidiary premises here. First, he seems to rely on a claim that only primary substances are subjects for secondary substances. However, what he really needs for his argument is the claim that whenever something is a subject for a secondary substance the definition of the secondary substance is properly predicated of it. Second, he relies on his claim that the definition of something that inheres in a subject can never be predicated of the subject (see 2a28ff). We can now see that Aristotle is offering a compressed version of something like the following argument.

(1) If x is a secondary substance, and y is a subject for x, then the definition of x is predicated of y. [35]

(2) If the definition of x is predicated of y, then it is not the case that x inheres in y.

∴(3) If x is a secondary substance and y is a subject for x, then it is not the case that x inheres in y.

(4) If y is not a subject for x, then it is not the case that x inheres in y.

∴(5) If x is a secondary substance, then it is not the case that x inheres in y.

(6) If x is a primary substance, then x does not inhere in y.

(7) If x is a substance, then x is either a primary or a secondary substance.

∴(8) If x is a substance, then x does not inhere in y. [(SDI)]

After showing that primary and secondary substances do not inhere in any subject, Aristotle turns to the discussion of differentiae at 3a21. He writes:

However, this [i.e. not being in any subject] is not peculiar to substance, but the differentia is also among the things that are not in a

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[35]   In each sentence in this argument, understand 'x' and 'y' to fall within the scope of universal quantifiers.

subject. Footed and two-footed are said-of human, but are not in a subject—neither footed nor two-footed is *in* human. And the definition of the differentia is predicated of that of which the differentia is said. For example, if footed is said-of man the definition of footed is also predicated of man, since man is footed (animal).[36] (3a21-28)

Aristotle's treatment of differentiae at 3a21-28 raises a series of problems.[37] However, for present purposes it is enough to note two things. First, Aristotle takes differentiae to be the sorts of things that do not inhere in any subject, supporting this claim by pointing out that differentiae aren't in primary substances in the non-technical sense. Second, Aristotle denies that the differentiae of substances are substances.

Having given some idea of the context for 3a29-32, I turn to this passage itself. Aristotle writes:

Let us not be troubled that we may be forced to say that the parts of substances are not substances, since they are in a subject (the wholes). For things were not said to be in a subject in this way which existed in something as parts.[38] (3a29-32)

Aristotle's worry seems clear. He does not want the acceptance of (SDI) to rule out his claiming that parts of substances are substances. Assume for a moment with Frede that Aristotle is talking about conceptual parts in the above passage. There are two classes of conceptual parts that we need to look at: the differentiae of substances, and the species and genera of substances. Let's look first at the situation with differentiae. Aristotle has just finished telling us that the differentiae of substances are not substances. It makes little sense then to think that he wants to allay our fear that (SDI) will force us to say that differentiae are not substances.

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36   "οὐκ ἴδιον δὲ οὐσίας τοῦτο, ἀλλὰ καὶ ἡ διαφορὰ τῶν μὴ ἐν ὑποκειμένῳ ἐστίν· τὸ γὰρ πεζὸν καὶ τὸ δίπουν καθ' ὑποκειμένου μὲν λέγεται τοῦ ἀνθρώπου, ἐν ὑποκειμένῳ δὲ οὐκ ἔστιν, – οὐ γὰρ ἐν τῷ ἀνθρώπῳ ἐστὶ τὸ δίπουν οὐδὲ τὸ πεζόν. – καὶ ὁ λόγος δὲ κατηγορεῖται ὁ τῆς διαφορᾶς καθ' οὗ ἂν λέγηται ἡ διαφορά· οἷον εἰ τὸ πεζὸν κατὰ ἀνθρώπου λέγεται, καὶ ὁ λόγος τοῦ πεζοῦ κατηγορηθήσεται τοῦ ἀνθρώπου, – πεζὸν γάρ ἐστιν ὁ ἄνθρωπος."

37   I discuss some of these problems, and offer a suggestion about why Aristotle nevertheless claims that differentiae aren't substances in chapter 2.

38   "μὴ ταραττέτω δὲ ἡμᾶς τὰ μέρη τῶν οὐσιῶν ὡς ἐν ὑποκειμένοις ὄντα τοῖς ὅλοις, μή ποτε ἀναγκασθῶμεν οὐκ οὐσίας αὐτὰ φάσκειν εἶναι· οὐ γὰρ οὕτω τὰ ἐν ὑποκειμένῳ ἐλέγετο τὰ ὡς μέρη ὑπάρχοντα ἔν τινι."

Therefore, Frede's interpretation will make sense only if Aristotle is trying to allay a fear that we will be forced by the combination of (SDI) and some fact about the species and genera of substances to claim that species and genera are not substances. The only additional fact that would have this implication would be that the species and genera of substances turn out to be things that inhere in a subject. Presumably the worry here would be that the species and genera of substances inhere in these substances. However, Aristotle has just told us at 3a7-21 that the species and genera do not inhere in substances, since they are not *in* substances, even in a non-technical sense. Accordingly, it would be quite strange to think that Aristotle sets out at 3a29-32 to allay a worry that comes about only by assuming the contradiction of what he has just said. The conceptual part reading of 3a29-32 is therefore untenable.[39]

On the other hand, if we take the parts of substances under discussion at 3a29-32 to be ordinary material parts like heads and hands, then we can see that Aristotle is responding to a real worry. Heads and hands are things that can be said to be in wholes, but they are also said to be substances.[40] If we take (SDI) seriously, it would seem that we have to give up on one of these claims about hands and heads. Aristotle responds to the worry by claiming that while heads and hands are in wholes in some sense of 'in', they are parts of these wholes. Since they are parts, they can't be said to inhere in the wholes. So we can hold on to both the claim that parts are in wholes, and

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[39]   In addition, we should note that it is a bit odd to claim that Aristotle uses '*tois holois*' at 3a30 to refer to species thought of as having their genera and differentiae as parts.
[40]   Aristotle clearly takes heads to be substances in his discussion of relatives at 8a13ff. Furthermore, he seems to think that individual heads are primary substances and that there is also a secondary substance, *head*, said-of the individual heads. What about the claim that a material part can be 'in' a whole? To say that a head is in a person seems to me to sound odd both in English and Greek. On the other hand to say that to say that a part is in a whole sounds fine. I take it that material parts can be properly said to be in wholes, in some sense of "in".

that the parts of substances are substances.[41] It seems, therefore, that the material part

reading of 3a29-32 fares better than the conceptual part reading.

There is, however, a third possibility for how to construe parthood at 3a29-32.

We might take the passage to be discussing neither material nor conceptual parthood,

but rather subjective parthood. On this interpretation Aristotle is worried that

particular substances will be in their species and genera. He would then be responding

to this worry by pointing out that particular substances are in their species and genera

as parts, and that parthood precludes inherence.[42] The view that Aristotle is talking

about subjective parthood here deserves serious consideration. Aristotle tells us at

2a14ff:

> The species *in which* the things primarily called substances [i.e. the
> primary substances] *belong*, are called secondary substances, as are the
> genera of these species. For example, the individual man *belongs in*
> species man, and animal is the genus of the species.[43] (2a14ff; my
> emphasis)

Aristotle's primary goal in this passage is to tell us what entities count as secondary

substances. But it is interesting that he talks about primary substances 'belonging in a

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[41]   What of Frede's claim that the shift from talk about genus, species, and differentia to talk
about material parts is overly jarring? I think Frede's case is weak on this score. Aristotle makes just
this shift in his discussion of the non-relativity of substances at 8a13-27. In fact, this is the only other
passage in the *Categories* where Aristotle discusses parts, and two things are clear in this passage. First
of all, Aristotle is talking about material parts of substances. Second, Aristotle clearly indicates that he
takes these material parts of substances, heads and hands, to themselves be substances.

[42]   This interpretation occurred to me as a result of reading Gareth Matthews' paper, "The Enigma
of *Categories* 1a20ff and Why it Matters." (1989). Matthews does not explicitly discuss the passage at
3a29-32, but takes up the worry that particular substances will turn out to inhere in something on the
basis of Aristotle's claim at 2a11-19 that the individual man "belongs in a species" (*en eidei men
huparchei*). Matthews worries that this passage, plus the facts that an individual is not part of the
species and cannot exist separately from its species, will force Aristotle to say that the individual man
inheres in something. Matthews points out that Ammonius uses the term '*merikos*' to refer to particulars
and takes the particular to be in some way a part of the species, and on these grounds constructs a
possible line of defense for Aristotle. In chapter VII, I develop an account of Aristotelian universals on
which they have particulars as parts. Nevertheless, I do not think that Aristotle has this type of parthood
in mind at 1a24-25 and 3a29-32.

[43]   "δεύτεραι δὲ οὐσίαι λέγονται, ἐν οἷς εἴδεσιν αἱ πρώτως οὐσίαι λεγόμεναι ὑπάρχουσιν,
ταῦτά τε καὶ τὰ τῶν εἰδῶν τούτων γένη· οἷον ὁ τὶς ἄνθρωπος ἐν εἴδει μὲν ὑπάρχει τῷ ἀνθρώπῳ,
γένος δὲ τοῦ εἴδους ἐστὶ τὸ ζῷον·"

species' ('*en eidei men huparchei*'). He uses a similar turn of phrase at 3a32, where he tells us that in talking about the things that are in a subject we did not mean '...the things belonging in something as a part' ('*ta hôs merê huparchonta tini*'). If 2a14ff commits Aristotle to holding that the primary substances 'belong in' the species, then it might be natural to take 3a32 as clarifying the way in which a primary substance belongs in a species.

I think that there are two problems with taking the parts mentioned at 3a29-32 to be subjective parts. First of all, the resultant interpretation once again has us taking primary substances to be *in* something in some sense of 'in' despite the claim at 3a7-21 that no substances are *in* anything even in the non-technical sense of 'in'. It is a bit strange to think that Aristotle takes back in 3a29-32 what he has just said for such a wide class of substances. It makes a bit more sense to think that he is just considering a special case at 3a29-32, which seems to go against the general rule that he has already laid down. The material part reading has him considering only a special case. Second, if we want to construe 3a29-32 as talking about subjective parts, then we will have to hold that in talking about 'wholes' ('*tois holois*') at 3a30, Aristotle means to pick out species and genera of substances. Although I argue elsewhere that Aristotle does take universals to be wholes which have particulars as parts, I don't think that it is natural to take '*tois holois*' in this passage to refer to universals.[44] As a result, I am a bit skeptical about taking 3a29-32 to be about subjective parts, and I think that it is most natural to take Aristotle to be talking about material parthood at both 3a29-32 and 1a24-25.

Frede is correct to claim that Aristotle refers back to 1a24-25 at 3a29-32, and that the sort of parthood under discussion at 3a29-32 is the same sort of parthood that

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[44]   Heinaman (1981) p301 notes that Aristotle's only other use of '*holos*' in the *Categories* (8a16) refers to material wholes, and that his other discussions of parts 8a13-28 and 8b15-21 refer to material parts.

is under discussion at 1a24-25. Given the interpretative implausibility of taking the discussion at 3a29-32 to involve conceptual parthood, it follows that it is interpretatively implausible to take the discussion at 1a24-25 as being about conceptual parts. Insofar as Frede's interpretation of Aristotle's discussion inherence at 1a24-25 depends on taking parthood in that passage as conceptual parthood, therefore, his interpretation is untenable.

It is possible to reject Frede's interpretation of 1a24-25, and nonetheless agree with his contention that Aristotle there seeks to define the relational property of being inherent in something rather than the relation of inherence. Gareth Matthews is one interpreter who holds such a position.[45] While I have no decisive objection to taking 1a24-25 as giving a definition of a relational property, I would like to note some problems with doing so.

First of all, if Aristotle is defining the relational property of being an inherer at 1a24-25, then there is no passage where he tells us what the *relation* of inherence is. However, it seems fairly clear that inherence is a technical notion for Aristotle, and that the nature of the relation isn't simply given by common sense. Furthermore, inherence seems to play a central role at the outset of the *Categories*, and we would expect Aristotle to tell us what the relation is. Even given my view that Aristotle takes inherence to be a fundamental relation and not a relation that he can define in more ontologically basic terms, I would expect him to say something about the sort of relation that it is.

Furthermore, it seems odd to call what is on the right-hand side of (IN_{F3}) a definition of the relational property of being in a subject. We would normally define an indefinite relational property in terms of its constitutive relation. For example, if I

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[45]   See Matthews (1989). At least Matthews does not make his own position dependent on taking the parthood discussed at 1a24-25 to be conceptual parthood.

wanted to define the indefinite relational property of being a grandmother, I might

proceed in the following way:

> (G1) x is a grandmother iff there is some y, such that x is the
> grandmother of y.

I might pick other relations in terms of which to define the relational property, but it

would be most natural to pick relations that are definitive of the constitutive relation of

the relational property. For example, I might define the indefinite relational property

of being a grandmother as follows:

> (G2) x is a grandmother iff there are y and z such that x is the
> mother of y and y is a parent of z.

However, it is important to notice that neither (G1) nor (G2) is analogous to what is

going on in (IN$_{F3}$). We might be given some conditions which all and only inherent

things meet, but we aren't told what it is for a thing to be an inherer. Compare the

situation here with an example hijacked from Quine.[46] Say that we are trying to define

the indefinite relational property of *being a renate* (a creature with a kidney).[47]

Imagine that all and only renates are cordates (creatures with hearts). Furthermore,

imagine that there is some kind of necessity involved here and that it isn't possible to

have creatures that have one sort of organ without having the other. I could give the

following as necessary and sufficient conditions for being a renate:

> (R1) x is a renate iff there is a y such that y is the heart of x.

(R1) might serve to indicate the class of entities which are renates, but it doesn't seem

to tell me what it is for an entity to be a renate. We are in a similar situation with

(IN$_{F3}$). It might indicate which entities are inherent in something, but it doesn't tell us

what is to inhere in something. To explain what I mean further, let's consider a

defense of Frede's interpretation offered by Gareth Matthews.

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[46]   See Quine's *Philosophy of Logic* (1970).
[47]   Take the relation *is a kidney of* as primitive, and define *is a renate* as follows: *x* is a renate =$_{def}$ there is some *y* such that *y* is a kidney of *x*.

It is an advantage of Frede's view that it allows the universal color to be in an individual body without requiring that the universal color existentially depend on that individual body. Color can be in several things, as long as it is existentially dependent on at least one of the things that it is in. Matthews take the task of defining the property of inhering in something to be identical to the task of defining the property of being an accident, and he writes:

> To say that something is an accident is to say that something it is in, though not necessarily everything it is in, accredits it as an accident— where accreditation amounts to being the thing it is in (not as a part) from which it cannot be separated. By analogy, I may have a grandmother in my class who is not my grandmother; to have a grandmother in my class it is enough for me to have someone in my class who is a grandmother. Likewise, I can have an accident in me which is therefore a subject-dependent being, even though I am not the subject the accident could not exist separately from.[48]

The notion of accreditation at work here is somewhat strange. Matthews and Frede seem to hold that the universal color is an accident of me and is also an accident of body. Nevertheless, I do not accredit the universal color as an accident. But why not? It makes perfect sense to say that I do not accredit a woman in my class as a grandmother, because she is not my grandmother. On the other hand, it would be odd to claim that I do not accredit *my* grandmother as a grandmother. But this is what Frede and Matthews take to be going on in the case of my accidents and me—I don't accredit things that stand in the accident-relation to me as things which stand in the accident relation to something.[49] So the grandmother analogy as currently constructed turns out to be a misleading analogy.

A better analogy to the case with accidents might be as follows. Let's define a new relation *is a grandmother* of,* where x is a grandmother* of y iff y is x's earliest-

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[48]   Matthews (1989), 96.

[49]   This despite the fact that '$\lambda x[\exists y(x$ is y's accident)]a' is just the existential generalization of '$\lambda x[x$ is Keith's accident]a'.

born grandchild. Since everything that has a grandchild has an earliest born grandchild, it seems that the following would be a true equivalence:

(G3) x is a grandmother iff there is a y such that x is the grandmother* of y.

It is clear that all and only those things which are grandmothers are grandmother*s. My grandmother is a grandmother*, but I do not accredit her as a grandmother* since I am not her earliest born grandchild. The relation *is a grandmother* of* is strictly stronger that the relation *is a grandmother of*. In a similar way, the relation defined by the right-hand side of (IN_{F3}) is strictly stronger than the inherence relation. According to the Frede-Matthews account, Aristotle sets out to define an indefinite relational property in terms of a relation that is strictly stronger than the constitutive relation of that indefinite relational property. Furthermore, he never gives us any characterization of the relation that is constitutive of the relation property in question. This practice does not seem to be a good one in giving definitions.[50] I, therefore, prefer to take 1a24-25 to be discussing the relation of inherence.

I've argued in this section that Frede's account of 1a24-25, like Owen's, faces substantial interpretative problems. In the next section, I argue that Frede and Owen do not provide a plausible alternative to the ontology of nonsubstantial particulars.

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[50]   Might Aristotle be following such a practice nevertheless? I cannot think of any knockdown argument against the claim that he is. One question is whether or not Aristotle would use the phrase '*en hupokeinenou de legô…*' in a case where he is simply trying to provide us with a condition that applies to all and only the things that are in something, rather than to provide something like a definition. Aristotle uses forms of '*legein*' in many contexts, and a catalog of all of them is beyond the scope of this paper, but it seems from a cursory glance at *Metaphysics* D that Aristotle uses the term (i) to indicate commonly accepted definitions of a term, or (ii) to introduce a stipulative definition of a term of art. In both these cases, it seems that Aristotle tries to do more than simply to pick out the same extension of the term under discussion. Again, however, this is pretty slim evidence on which to base much. Furthermore, Matthews and Frede can claim that Ackrill's alternative saddles Aristotle with an inconsistency, and can hold that it is more charitable to attribute an odd definitional practice to Aristotle than it is to attribute an inconsistency to him.

Section 4.4: Problems for the Owen-Frede Ontology

Both Frede and Owen deny that Aristotle accepts NSPs. Instead, they claim

that Aristotle takes entities which inhere in a subject but which are not said-of a

subject to be fully determinate types. Owen gives us the example of *vink*, a fully

determinate shade of light pink, as an example of the sort of entity the Aristotle calls

'*to ti leukon*'. Fully determinate types can inhere in more than one subject, but lacking

sub-types, they are not said-of anything at all.

In his discussion of what it is for an entity to be a universal in *De

Interpretatione*, Aristotle writes, "I call universal that which is by nature predicated of

a number of things, and particular that which is not." (17a39-40) In claiming that a

universal is naturally predicated of a plurality of things ('*epi pleionôn pephuke

katêgoreisthai*'), Aristotle does not necessarily indicate that a universal must be said-

of many things. Rather, he need only be saying that a universal naturally has a

plurality of subjects.[51] Since *to ti leukon* (on Owen's and Frede's views) inheres in

many subjects, it will count as a Aristotelian universal.[52]

If entities like this pallor (*to ti leukon*) are universals, then we would expect

them to be characterized in a way similar to other universals; they should belong to

genera and have differentiae. Heinaman points to textual evidence that the universal

pale, which would be the obvious choice as the genus of this pale, is not taken to be a

genus by Aristotle.[53] However, let's assume that *to ti leukon* is a fully determinate type

and does have a genus and differentia. If *x* has a genus and differentia, then it would

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[51]   Irwin (1988) holds that Aristotelian universals must actually be predicated of a plurality of
subjects. I take up this issue in more detail in chapter 7.
[52]   As Wedin (2000) points out, Owen is a bit unclear about what he takes entities like *vink* to be.
Owen seems sometimes to deny that *vink* is predicated of a number of subjects, but I think that Owen
might be denying only that the strong predication relation (or the said-of relation) holds between *vink*
and anything else. Owen seems to be able to allow that a more generic predication relation obtains.
[53]   See Heinaman (1981) p303, where he discusses *Topics* 127a20-25. In some ways, it seems like
Aristotle is struggling to differentiate genus-species cases from determinable-determinate cases in this
passage.

seem to be the case that *x* has a definition.[54] But, if *x* has a definition, then there will be an expression the definition of *x*, say ⌐*def(x)*¬ which can be linguistically predicated of x. Furthermore, the name of *x* is trivially linguistically predicable of *x*. But in that case, x seems to pass the linguistic test for being said-of *x*. The class of things that are said-of something seems to be coextensive with the class of things that are definable.[55]

Another problem with the view that '*to ti leukon*' does not refer to an NSP has to do with Aristotle's statements about the relation between numerical oneness and predication.[56] Frede and Owen maintain that *to ti leukon* is indivisible and numerically one, despite inhering in a number of individuals, because it is not said-of any entity. It seems, however, that we can construct an argument from what Aristotle says in the *Categories* against this position. At 1b6-8, Aristotle claims "What is indivisible and one in number is unqualifiedly said-of no subject." Where '*Ix*' stands for '*x* is indivisible', '*Nx*' for '*x* is one in number', and '*Oxy*' for '*x* is said-of *y*', we can formalize Aristotle's claim as follows:

(O1) $\forall x((Ix \,\&\, Nx) \supset \neg \exists y(Oxy))$ (1b6-8)

Later in the *Categories*, Aristotle claims "There is no predicate at all from a primary substance, since it is said-of no subject." (3a36) Aristotle's inference in this passage depends on his acceptance of the following principle (where '*Px*' stands for '*x* has a predicate from it'):

(O2) $\forall x(\neg \exists y(Oxy) \supset \neg Px)$ (3a36)

By contraposition, (O2) yields:

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[54]   Notice that no individual has a differentia in the sense required here. There is no differentia said-of Socrates that differentiates him from all the other things in his immediately superordinate kind. In the case of *vink*, we are assuming that there is something that differentiates *vink* from other pale colors.

[55]   I don't think that we should make too much of this complaint. We might hold that Aristotle's linguistic test has an implicit distinctness clause, and holds that *x* is said-of *y* only if *x*≠*y*.

[56]   After constructing this argument, I found a more detailed and comprehensive version of what is essentially the same argument in Wedin (1993). Wedin (2000) has a revised version of the argument from his 1993 paper.

$$(O3)\ \forall x(Px \supset \exists y(Oxy))\ \ \text{(from (O2))}$$

So, if there is a predicate from an entity, then that entity is said-of something. However, it seems as though there is a predicate from the entity *vink*. Here is that predicate: '__ is vink'. We can be a little more precise. Say that we have two cases of linguistic predication of the forms ⌜α is F⌝ and ⌜β is F⌝, where ⌜α⌝ and ⌜β⌝ refer to distinct entities. Further assume that the truthmaker for ⌜α is F⌝ involves the holding of a relation between an entity indicated by ⌜α⌝ and an entity indicated by ⌜F⌝, and that the truth-maker for ⌜β is F⌝ involves the holding of that relation between the entities indicated by ⌜β⌝ and ⌜F⌝ (where the same entity is indicated by ⌜F⌝ in both statements). Then ⌜F⌝ is a predicate from the entity indicated by ⌜F⌝. So if "Socrates is vink" and "Coriscus is vink" are made true by *vink's* inhering in Socrates and Coriscus respectively, then 'vink' is a predicate from *vink*. In any case that we can choose, it seems possible for us to come up with a predicate from a most determinate type. If there is a predicate from *vink*, however, it follows from (O3) that there is some entity that *vink* is said-of. But it then follows from (O1) that *vink* is not indivisible and one in number, and we have a contradiction, If on the other hand, '*to ti leukon*' refers to an NSP, we needn't be led to hold that there is a predicate from that NSP, because no other entity is pale by bearing a relation to this very NSP. To be clear, there *will* be a predicate from the most determinate universal, but there will not be any predicate from a NSP that a fully determinate universal is said-of.

It seems that the only way that the denial of NSPs can be made to work would be to introduce a special kind of entity. This entity would have to be in many subjects, but it would have to be indefinable. Perhaps there are sub-specific types, which are not locatable by specification of a genus and differentia. The model here might be something like the determinate-determinable relation. All non-substantial species are determinables and the entities picked out using '*ho tis*' locutions are determinates.

These determinates will inhere in a subject, but, perhaps because they are indefinable, will not be said-of anything. There is nothing philosophically incoherent about such a view, and we might think that such a view is required, if we think that there can be an infinite variety of universals but only a finite number of lowest species.[57]

However, Frede and Owen will also have to hold that there are no predicates from these determinate types. However, even fully determinate and indefinable types seem to be entities from which there are predicates. A proponent of the Owen-Frede view, therefore, owes us an account of what it is for there to be a predicate from an entity which makes plausible ruling out determinates as entities from which there are predicates. I do not see how such an account of predication would go. I conclude that the ontology offered by Owen and Frede, on which entities that are in a subject but not said-of any subject are fully determinate universals, cannot be squared with what Aristotle says in the *Categories*. Furthermore, I have argued that the attempts by Owen and Frede to offer an alternative account of the definition of inherence at 1a24-25 fail. In the next chapter, I examine independent evidence from the *Physics* that Aristotle accepts the existence of NSPs.

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[57]   This claim follows from the plausible assumptions that (1) we can reach any species by a finite number of genus-differentia divisions, and (2) every genus has a finite number of sub-genera.

CHAPTER 5

NONSUBSTANTIAL PARTICULARS IN THE *PHYSICS*

In this chapter, I argue that Aristotle's analysis of coming to be in *Physics* I.7 commits him to just the sort of non-substantial particulars that Frede and Owen find so problematic. Furthermore, I posit a single picture of Aristotle's ontology that I take to underlie both his thoughts about the truthmakers for substance-accident predication, and his thoughts about the nature of change. In the course of outlining this ontology, I hope to come to a better understanding of the nature of the inherence relation.

At *Physics* 189b32-190a5, Aristotle distinguishes simple things from composite things in his analysis of coming-to-be.

> When we say that something comes to be out of something and that something comes to be out of something else, we are speaking of either the simples or the composites. I mean this as follows. It is possible (i) that a man becomes musical, (ii) that the unmusical becomes musical, and (iii) that the unmusical man becomes musical man. I call the man and the unmusical simple becomers, and the musical a simple thing which comes to be. Both the thing which comes to be and the becomer are composite, whenever we say that the unmusical man becomes the musical man.[1](189b32-190a5)

In this passage, Aristotle considers a case of alteration in which a man goes from being unmusical to being musical. In this case we can distinguish three simple things

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[1]   φαμὲν γὰρ γίγνεσθαι ἐξ ἄλλου ἄλλο καὶ ἐξ ἑτέρου ἕτερον ἢ τὰ ἁπλᾶ λέγοντες ἢ τὰ συγκείμενα. λέγω δὲ τοῦτο ὡδί. ἔστι γὰρ γίγνεσθαι ἄνθρωπον μουσικόν, ἔστι δὲ τὸ μὴ μουσικὸν γίγνεσθαι μουσικὸν ἢ τὸν μὴ μουσικὸν ἄνθρωπον ἄνθρωπον μουσικόν. ἁπλοῦν μὲν οὖν λέγω τὸ γιγνόμενον τὸν ἄνθρωπον καὶ τὸ μὴ μουσικόν, καὶ ὃ γίγνεται ἁπλοῦν, τὸ μουσικόν· συγκείμενον δὲ καὶ ὃ γίγνεται καὶ τὸ γιγνόμενον, ὅταν τὸν μὴ μουσικὸν ἄνθρωπον φῶμεν γίγνεσθαι μουσικὸν ἄνθρωπον. (189b32-190a5) Take the sentence schema, ⌜X becomes Y⌝. Aristotle wants to distinguish X, the thing that undergoes the process of becoming (the *terminus a quo*), from Y, the end product of the change (the *terminus ad quem*). I use the awkward phrase 'simple becomer' to translate '*to gignomenon haploun*', which is the starting point of the change. I render '*ho gignetai*' as 'that which comes to be', and this is the end point of the change. At this point in the chapter, Aristotle uses '*to gignomenon*' for the things that undergo the process of becoming and '*ho gignetai*' for the end product which comes to be. However, later in the chapter at 190b11, Aristotle suddenly reverses his use of terminology, and uses '*to gignomenon*' for the end products of change, and '*ti ho touto gignetai*' for the things undergoing the process of change (see Ross (1936), 493).

(*ta hapla*): the man (*ho anthrôpos*), the unmusical (*to mê mousikon*), and the musical (*to mousikon*). I call the first two entities 'simple becomers', and these are the things that are present before the change has happened. I call the third simple entity 'a simple thing which comes to be', and this thing is what is present at the end of the change. We can also distinguish two composite entities (*ta sunkeimena*): the unmusical man (*ho mê mousikos anthrôpos*) and the musical man (*ho mousikos anthrôpos*); these are composed from the simple entities mentioned. Once again, we can distinguish the entity from which the change proceeds, the unmusical man, from the entity towards which the change proceeds, the musical man.

Aristotle takes the simples to be entities. That '*ho anthrôpos*' refers to an individual man is not a matter for controversy. However, the semantic values of '*to me mousikon*' and '*to mousikon*' are less clear. Furthermore, we need to figure out the nature of the compound entities, and what it is for simple entities to form such a compound.[2]

The phrase '*to mousikon*' consists of the neuter singular form of the definite article and the neuter singular form of the adjective '*mousikos*', the meaning of which is broader than the meaning of the English adjective 'musical'. While '*mousikos*' can be used to ascribe narrowly musical skill to a person, it can also be used to describe someone who is more broadly learned or cultured.[3] The combination of the definite article and the neuter form of the adjective can generally be understood in two distinct

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[2]   I take Aristotle to use 'simple' and 'composite' to describe features of entities, rather than to describe features of the phrases we use. In other words, Aristotle is not simply making a point that we can use three different phrases to refer to a thing, 'the musical', 'the man' and 'the musical man', the first two of which are grammatically simple the last of which is grammatically complex. Rather, Aristotle takes the semantic values of 'the musical' and 'the man' to be simple, while the semantic value of 'the musical man' is somehow a compound. In a similar manner, I take Aristotle to distinguish three processes in (1)-(3) above, rather than to distinguish three ways of talking about a single process. These distinctions will become crucial as our discussion proceeds.

[3]   See Charlton (1992), 45. Also see Liddell and Scott's Lexicon (1991), 520: "**mousikos**…**II.** of persons, *skilled in music, musical*…2. Generally *a votary of the Muses, a man of letters and accomplishment, a scholar.*"

ways. First, we might take '*to mousikon*' to indicate something general like knowledge of music, musicality or culturedness. Alternatively, we might take the phrase as a singular concrete substantive, meaning something like 'the musical thing'. Aristotle's claims at 190a9-13, however, seem to rule out the former interpretation.

> Of the becomers, which we call simple becomers, one remains when it comes to be, the other does not remain. On the one hand, the man coming to be musical remains and is a man, but the not musical (*to mê mousikon*) and the unmusical [*to amouson*] remain neither simply nor as components.[4] (190a9-13)

There is no reason to think that ignorance of music, taken generally, ceases to exist when a particular man comes to know music. Furthermore, it does not seem to be correct to say that knowledge of music or musicality in general come into existence when a particular man comes to know music. On the other hand, if we take *to mê mousikon* and *to mousikon* to be particulars, then there is a straightforward sense in which the former ceases to exist and the latter comes to be. A particular case of ignorance of music can plausibly be taken to cease to exist when a man learns music. Furthermore, a particular instance of musicality can plausibly be taken to come into existence when the change occurs. There seems to be a good *prima facie* reason,

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[4]   τῶν δὲ γιγνομένων ὡς τὰ ἁπλᾶ λέγομεν γίγνεσθαι, τὸ μὲν ὑπομένον γίγνεται τὸ δ' οὐχ ὑπομένον· ὁ μὲν γὰρ ἄνθρωπος ὑπομένει μουσικὸς γιγνόμενος ἄνθρωπος καὶ ἔστι, τὸ δὲ μὴ μουσικὸν καὶ τὸ ἄμουσον οὔτε ἁπλῶς οὔτε συντεθειμένον ὑπομένει (190a9-13). In my translation of "ὁ μὲν γὰρ ἄνθρωπος ὑπομένει μουσικὸς γιγνόμενος ἄνθρωπος καὶ ἔστι," I follow Charlton (1992) in taking the second '*anthrôpos*' with '*esti*'. It also seems possible to translate the passage as 'The man becoming a musical man remains and exists.' The problem with the latter translation is that it has a simple *terminus a quo* and a compound *terminus ad quem*. In his distinguishing three different processes of coming to be, Aristotle does not recognize such a case. It seems preferable, therefore, to translate the passage so that both *termini* of the change are simple. On a related note, we should recognize the fact that Aristotle here uses the masculine singular nominative adjectival '*mousikos*' rather than the neuter substantive '*to mousikon*'. This shifting of gender seems to be dictated by grammatical agreement with '*ho anthrôpos*) and I do not think that it should be taken to be philosophically significant. We are still looking at the same sort of case discussed at 189b35, where a man becomes '*to mousikon*'.

therefore, to hold that '*to mê mousikon*' and the like refer to particulars rather than to anything general.[5]

I want to examine three additional arguments that tell in favor of taking *to mê mousikon* and the like to be particulars. The first two arguments are textual or grammatical. The third argument involves an interpretation of what Aristotle means when he claims that things are 'one in number'.[6]

There is one manuscript tradition according to which Aristotle uses the phrase '*to mê mousikon **ti***' at 189b35 when he introduces the simple entities involved in coming to be. If this reading is correct, then the use of the indefinite pronoun '*ti*' gives us strong evidence that Aristotle takes such entities to be particulars. Charlton (1992) notes this fact in his commentary but says, without telling us why, that he reluctantly follows Ross (1936) in omitting the '*ti*'.[7] According to Ross, the L family of manuscripts F, I and J include the '*ti*'. On the other hand, manuscript E, the Latin translation of Book I from the Arabic, the commentaries of Philoponus and Simplicius, and Themistius's paraphrase have '*to mê mousikon*' without the '*ti*'. Bekker (1831) follows F and I in his edition, while Ross (1936) follows E. Ross argues that E is to be accorded special importance, and that where E agrees with the commentaries we generally have good reason to favor its reading over that of

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[5]   It might be possible to argue that when Aristotle tells us that *to mê mousikon* does not remain, he means only that it is no longer present in some particular case and not that it ceases to exist. *To mê mousikon* continues to exist, but it ceases to be present in the particular man that changes. If we accept such an argument, then we could also hold that *to mê mousikon* is non-particular. However, I think that Aristotle is making the stronger point that the item ceases to exist when he tells us that it remains neither simply nor as a component.

[6]   As part of a more general argument that forms are concrete particulars rather than abstract properties of particulars, Charlton (1992) pp. 70-73 examines several passages and gives several arguments favorable to the claim that *to mê mousikon* and the like are particulars. Charlton concludes that the relation between the form (*to mousikon*) and the underlying thing (the man) is one of thing constituted to constituent. I largely agree with Charlton on this score, although we seem to have different understandings of the nature of the constitution relation.

[7]   See Charlton (1992) pp70-71.

manuscripts F, I and J.[8] Nevertheless, in some cases Ross holds that the L family of manuscripts is sometimes to be preferred to E. Although he does not explicitly present an argument in favor of his reading of 189b35, he seems to have something like the following in mind. The passage makes perfect sense without the '*ti*', and we do not have evidence for occurrences of '*ti*' in the commentaries. Furthermore, Aristotle doesn't generally use the indefinite pronoun when talking about the sorts of entities in question, as is clear from looking at the remainder of *Physics* I.7. Therefore, it makes more sense to think that the L folks added something to the text than it does to think that the E fellow erased something.

While this argument is reasonable, it doesn't strike me as conclusive. It seems that we can use the same evidence to argue for the superiority of the L-reading. The fact that we don't find '*ti*' in any of the parallel passages in *Physics* I.7 shows that the L folks weren't involved in emending the text. After all, if they were going to emend the text, they could easily have put in '*ti*' in other places in I.7. We could then conjecture that E erased the '*ti*' at 189b35 to make the wording in this passage parallel to the wording in the rest of the passage where '*ti*' is not used. I don't think that this argument is compelling either, and I am not sure that a compelling case can be made either way. However, at the very least, the existence of the L tradition clearly shows that some earlier scholars took Aristotle to use '*to mê mousikon*' and the like to talk about particular entities.

Charlton (1992) points to a second piece of textual evidence that Aristotle takes *to mê mousikon* and the like to be particulars. In his discussion of when it is proper to say that something comes to be out of something else, Aristotle writes:

> In some cases it is said not only that something comes to be, but also
> <that it comes to be> out of this. For example the musical [*mousikos*]

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[8] Ross cites with approval Diels' (1882) claim that the commentaries are based on a manuscript tradition largely independent of all the extant manuscripts.

<comes to be> out of the unmusical. But we don't say this in all cases. For the musical [*mousikos*] doesn't come to be out of the man, but the man becomes musical.[9] (190a5-8)

Talking about the same topic later in I.7, Aristotle writes:

> **(a)** It is said that something comes to be out of something, and not that something comes to be something, more in the case of the things that don't remain; for example, that the musical [*mousikon*] comes to be out of the nonmusical, but not out of man…**(b)** But <what comes to be> out of what is opposed and doesn't remain is spoken of in both ways; <we say> both that this <comes to be> out of that, and that this comes to be that. For both out of the unmusical and the unmusical comes to be the musical [*mousikos*]. **(c)** Hence things are the same in the case of the composites. For it is said both that out of the unmusical man comes to be the musical (man) [*mousikos*], and that the unmusical man becomes the musical [*mousikos*].[10] (190a21-23…190a26-31)

In both these passages, Aristotle uses the masculine '*mousikos*' rather than the neuter '*mousikon*' to refer to the thing that comes to be. The masculine form would not normally be used to refer to something like musicality in the abstract. Rather, it seems to refer to a concrete particular.

Normally the substantive use of '*mousikos*' would mean something like *musical man* or *musician*. If Aristotle means to talk about the musical man by using

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[9]   "τούτων δὲ τὸ μὲν οὐ μόνον λέγεται τόδε γίγνεσθαι ἀλλὰ καὶ ἐκ τοῦδε, οἷον ἐκ μὴ μουσικοῦ μουσικός, τὸ δ' οὐ λέγεται ἐπὶ πάντων· οὐ γὰρ ἐξ ἀνθρώπου ἐγένετο μουσικός, ἀλλ' ἄνθρωπος ἐγένετο μουσικός."(190a5-8)
         I follow Charlton in translating "οὐ μόνον λέγεται τόδε γίγνεσθαι ἀλλὰ καὶ ἐκ τοῦδε" as "…it is not only said that something comes to be but also <that it comes to be> out of this," and "οἷον ἐκ μὴ μουσικοῦ μουσικός" as "the musical <comes to be> out of the unmusical". Ross, and Hardie and Gaye in Barnes (1984) prefer, "We say not only that it becomes this, but <that it becomes this> from this," and "from unmusical <he becomes> musical". Both translations are grammatically possible. '*Gignesthai*' can be treated either as the one-place predicate 'x comes to be' and '*tode*' and '*mousikos*' can be treated as subjects for this one-place predicate. On the other hand we can treat '*gignesthai*' as a two-place predicate 'x becomes y' and understand the 'x' place to be occupied by an understood subject, taking '*mousikos*' as a value for 'y'. A similar issue is involved in the translation of 'οὐ γὰρ ἐξ ἀνθρώπου ἐγένετο μουσικός,' which I translate as 'the musical doesn't come to be out of the man,' rather than as 'he doesn't come to be musical from being a man'.
[10]   τὸ δ' ἔκ τινος γίγνεσθαί τι, καὶ μὴ τόδε γίγνεσθαί τι, μᾶλλον μὲν λέγεται ἐπὶ τῶν μὴ ὑπομενόντων, οἷον ἐξ ἀμούσου μουσικὸν γίγνεσθαι, ἐξ ἀνθρώπου δὲ οὔ… τὸ μέντοι ἐκ τοῦ ἀντικειμένου καὶ μὴ ὑπομένοντος ἀμφοτέρως λέγεται, καὶ ἐκ τοῦδε τόδε καὶ τόδε τόδε· καὶ γὰρ ἐξ ἀμούσου καὶ ὁ ἄμουσος γίγνεται μουσικός. διὸ καὶ ἐπὶ τοῦ συγκειμένου ὡσαύτως· καὶ γὰρ ἐξ ἀμούσου ἀνθρώπου καὶ ὁ ἄμουσος ἄνθρωπος γίγνεσθαι λέγεται μουσικός." (190a21-23…190a26-31)

'*mousikos*' throughout these passages, then it seems that he is talking about the coming to be of composite entities throughout. However, it seems that Aristotle only turns to the discussion of composite entities in part **(c)** of the second passage. In this part it makes some sense to hold that Aristotle is using '*mousikos*' either adjectivally or to mean the musician or the musical man. However, in part **(b)** of the second passage, it seems by contrast that Aristotle is using '*mousikos*' to talk about a simple entity. Furthermore, it seems that Aristotle's uses '*mousikon*' in part **(a)** of the second passage, which could be morphologically either masculine or neuter, to refer to a simple rather than a composite entity. The fact that the other items under discussion in part **(a)**, i.e. the man and the unmusical, are simples gives us good reason to think that Aristotle uses '*mousikon*' here to refer to a simple. On similar grounds, it seems reasonable to take Aristotle to be using '*mousikos*' in the first passage to be talking about a simple as well. The shift to the masculine gender does not seem to signal any difference in the sorts of entities talked about.[11] The simple elements of change still seem to be the unmusical, the musical, and the man. To sum up the argument: Aristotle uses both the masculine and neuter form of '*mousikos*' to talk about the simple entities involved in coming to be. But the masculine form can't be used to talk about something abstract or general. Therefore, it seems that Aristotle takes entities like *to mousikon* to be particulars of some kind.

I turn now to my final argument that *to mê mousikon* is a particular. Aristotle tells us at 190a12ff that there is an underlying thing in all cases of coming to be, and that this is one in number (*hen arithmôi*) but not one in form or account (*hen eidei,*

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[11]   I think that the shift to the masculine gender here marks a concession to grammar rather than a philosophical distinction. When Aristotle talks about the man becoming musical, '*anthrôpos egeneto mousikos*', '*mousikos*' is used as an adjective and is masculine to agree with '*anthrôpos*'. '*anthrôpos egeneto mousikon*' would be grammatically bizarre, even if one were to try to use it to assert that the man became a musical thing. Perhaps Aristotle uses the masculine substantive adjective to agree with the masculine descriptive adjective in this passage. Nevertheless, if we want to talk about the entities involved in this case of a simple coming to be a simple, we want to isolate the man and the musical.

hen logôi). As proof for the claim that the underlying thing is not one in form or account, Aristotle tells us that being a man is not the same as being ignorant of music. Aristotle tells us that the simple factors from which the change proceeds, *to mê mousikon* and *ho anthrôpos*, are numerically one. Since the man is obviously a particular, this claim makes sense only if *to mê mousikon* is also a particular. I see no way in which ignorance of music in general could be properly said to be one in number with a particular man. Therefore, *to mê mousikon* must be some sort of particular.[12]

But what sort of particulars are *to mousikon* and *to mê mousikon*? There are three possibilities. First, as Charlton thinks, '*to mê mousikon*' might simply refer to the particular man that undergoes the alteration—the man and the unmusical are identical. Second, *to mê mousikon* might be what Matthews calls an accidental unity or a "kooky object". Kooky objects are entities like musicians, grammarians or pale men, which seem to be substance-accident compounds. Matthews argues that such entities are numerically the same as, or coincident with, particular substances without being identical to these substances. Furthermore, kooky objects need not share all properties with their coincident substances.[13] Third, *to mê mousikon* might be something like an instance of unmusicality. I favor the third option. Furthermore, I suggest that such instances are nothing other than the sorts of entities that Aristotle takes to be in a subject, but not said-of any subject, in the *Categories*.

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[12]   This argument might be a little quick. Someone might try to hold that a general or abstract entity like *unmusicality* can be one in number with a particular man, and that happens whenever the man is unmusical. I suppose that the idea here would be that whenever we have an unmusical man, we have a universal component *unmusical* and a particular component the man—perhaps these are something like what Armstrong calls 'states of affairs' in *A World of States of Affairs* (1997). Nevertheless, I don't think that such a view is Aristotle's. Aristotle also seems to think that *oneness with* is a transitive and symmetrical relation. So things one in number with the same thing are themselves one in number with each other. But Socrates and Callias are not one in number even in a case where both are unmusical. So whatever *unmusicality* Socrates is one with cannot be one in number with that that Callias is one with.

[13]   See Matthews, "Accidental Unities" (1982).

According to Charlton, Aristotle takes *to mê mousikon* and *to mousikon* to be identical to the man that undergoes alteration. In his analysis of coming to be, Aristotle claims that every case of coming to be involves a form, a privation, and an underlying thing.[14] In the example that we have been considering, the man is the underlying thing, the musical (*to mousikon*) is the form, and the unmusical (*to mê mousikon*) is the privation. Charlton argues that the form is to be identified not with anything abstract, like musicality, but with the concrete musical thing. I agree with Charlton that the form must be something particular. However, Charlton goes on to identify the form with the individual human being. The concrete musical thing on Charlton's view *just is* the individual human being.

It will be helpful to turn our attention for a moment to Charlton's interpretation of Aristotle's account of the coming to be of substances. With this framework in place, we will be able to better assess Charlton's views about the nature of entities like *to mousikon*. In *Physics* I.7, Aristotle distinguishes between the generation of substances and the alteration of substances.

> Things are said to come to be in many ways. In some cases things are said not to come to be, but to come to be something, but only substances are said to come to be without qualification. It is evident in the other cases, that it is necessary that some becomer underlie. For a quantity, or quality, or relative to another, or time, or place comes to be of some underlying thing, because substance alone is never said of another subject, but all the others are said of substance.[15] (190a31-b1)

Aristotle uses the same verb, '*gignesthai*' or 'to come to be', for both generation and alteration. However, he tells us that only in the case of a substance's coming to be do we have 'coming to be without qualification' (*haplôs gignesthai*). In other types of

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[14]   See 191a12ff.

[15]   πολλαχῶς δὲ λεγομένου τοῦ γίγνεσθαι, καὶ τῶν μὲν οὐ γίγνεσθαι ἀλλὰ τόδε τι γίγνεσθαι, ἁπλῶς δὲ γίγνεσθαι τῶν οὐσιῶν μόνον, κατὰ μὲν τἆλλα φανερὸν ὅτι ἀνάγκη ὑποκεῖσθαί τι τὸ γιγνόμενον (καὶ γὰρ ποσὸν καὶ ποιὸν καὶ πρὸς ἕτερον [καὶ ποτὲ] καὶ ποὺ γίγνεται ὑποκειμένου τινὸς διὰ τὸ μόνην τὴν οὐσίαν μηθενὸς κατ' ἄλλου λέγεσθαι ὑποκειμένου, τὰ δ' ἄλλα πάντα κατὰ τῆς οὐσίας)·" (190a31-b1)

change, something 'comes to be something' (*tode ti gignesthai*). Furthermore, whenever something other than a substance comes to be, a substance underlies the change. In cases of unqualified coming to be, or generation, Aristotle also says that something underlies the change. For example, bronze underlies the coming to be of a statue, or stone the coming to be of a Hermes.

Charlton first claims that in cases of generation, it is proper to identify the matter, or underlying thing involved in a change, with the form. Then by extending the analogy between generation and alteration Charlton is able to claim that the form is identical to the underlying thing in cases of alteration. So, for example, the musical (*to mousikon*) is identical to the man. However, Charlton fails to take into account a significant difference between generation and alteration, and that difference should make us reluctant to apply everything Aristotle says in the case of generation to the case of alteration.

According to Charlton, when Aristotle talks about the coming to be substances such as human beings, the form is not to be identified anything abstract like humanity, but rather with the concrete human being. When we give a hylomorphic analysis of a substance in terms of matter and form, the form is not something that is added to the matter to yield the concrete substance. Rather, the form *just is* the concrete substance, and the relation between the matter and form is one of constituent to thing-constituted.[16] Furthermore, on Charlton's view, this sort of constitution implies identity; the matter of the human being, the form, and the hylomorphic compound are identical. We can *describe* a single substantial entity in various ways—as matter, as

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[16]   Charlton cites Wiggins *Identity and Spatiotemporal Continuity* (Oxford: 1967) in support of his view about the hylomorphic analysis of substances. For criticism of Wiggins, see Ackrill, J.L. "Aristotle's Definitions of *Psuchê*." (1973). For additional discussion, see Whiting "Living Bodies" (1992). See also Wiggins *Sameness and Substance* (1980) and *Sameness and Substance Renewed* (2001).

form, or as compound—but *there is* a single thing indicated in all these cases.[17] Similarly, Charlton claims that we can describe the entity involved in alteration as privation, underlying thing, and form. However, we refer to a single entity by means of all of these descriptions. When we use 'the unmusical' and 'the man' we signify a single entity in two different ways.

I am largely sympathetic with the story that Charlton tells about the generation of substances. However, there is an important difference between generation and alteration that I think Charlton overlooks. Let's say Charlton is right about generation. Let h be a hylomorphic compound, f be a particular form of that compound, and m be the matter of that compound. It seems clear that Aristotle takes h and f to begin to exist at a particular point in time. What about m? Did m exist before h and f came to be? Aristotle seems to think that the matter in one sense pre-exists the compound, and in another sense does not.[18] On the one hand, when an entity comes into existence there is stuff that underlies the coming to be, and this stuff is around before the substance comes to be.[19] On the other hand, insofar as we take m to be a numerically singular

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[17] There are two identity claims that should be distinguished here. One claim is that the hylomorphic compound is identical with the form. The other claim is that the form and hylomorphic compound are identical with the matter. Charlton accepts both claims. It is unclear to me whether Wiggins would want to accept the latter claim, especially given his views in "On Being in the Same Place at the Same Time" (1968). In this work, Wiggins seems determined to distinguish constitution from identity. See also Wiggins (1980).

[18] The nature of matter in Aristotle raises a host of difficult problems, and I cannot treat these fully in this work. For purposes of my disagreement with Charlton over the right way to construe '*to mousikon*' and the like, all that matters is that in cases of alteration it is not plausible to identify the underlying thing with the privation. The former survives the change, while the latter does not. Therefore, the privation cannot be identical to the form. In fact, I think that we can go further and claim that nothing numerically one survives an instance of generation. This is a difficult issue, however. For more on Aristotle's views about matter, and the way in which these views relate to the current discussion, see Ackrill (1973), Alan Code "The Persistence of Aristotelian Matter" (1976), Jennifer Whiting "Living Bodies" (1992), Mary Louise Gill's *Aristotle on Substance* (1989), and Kit Fine's "Aristotle on Matter" (1992), "A Puzzle Concerning Matter and Form" (1994) and "The Problem of Mixture" (1995).

[19] Aristotle discusses the different ways in which matter underlies the coming to be of substances at 190bff. See also *De gen et cor* (especially I.4), for an attempt by Aristotle to distinguish generation from alteration. The distinction seems to come down to whether there is a single *this* that can be said to survive the change. If there is such a *this*, then the change is a case of alteration.

object that is identical with *h* and *f*, to say that *m* was around before *h* and *f* leads to a contradiction. After all, identity is a permanent relation and a thing cannot pre-exist itself. Whatever the matter is that does pre-exist *h* and *f*, therefore, cannot be identical to *m*.[20] I think that this is a plausible result when we consider Aristotle's thoughts about the coming to be of substances. When a substance comes to be, a new *this* comes into existence. It is not the case that an identifiable *this* persists through substantial change.[21] In fact, when a change does involve the survival of an

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[20]   There are various ways around the argument that I outline here, but I don't think that any of them are open to Aristotle. We might adopt a strategy familiar from Quine "Identity, Ostension and Hypostasis" (1950) and *Word and Object* (1960), and David Lewis "Survival and Identity" (1976), and *On the Plurality of Worlds* (1986). We could claim that '*h*' and '*f*' refer to a single space-time worm and that this worm is a proper part of the worm that '*m*' refers to. See Code "Aristotle's Responses to Quine's Objections to Modal Logic" (1976) for a discussion of the way in which this strategy relates to Aristotle. In the end, I think that Aristotle is too firmly a three-dimensionalist to adopt such a strategy. See Ted Sider *Four-Dimensionalism* (2001) for a discussion of three-dimensionalism vs. four-dimensionalism.

We might try to claim that identity is temporary, or that all identity statements must be relativized to times. We might then say that *m* pre-exists *h* and *f*, but that *m* used to be non-identical to *h* and *f*. For such a treatment of cross-temporal identity claims, see George Myro's "Identity and Time" (1985), and Michael Rea's introduction in Rea's *Material Constitution* (1997). See also Ted Sider *Four-Dimensionalim* (2001). Sider suggests that we treat claims about the past and present of objects counterpart-theoretically, in a way similar to David Lewis' treatment of modal claims. The idea then would be that when we talk about 'the matter of a thing', the chosen counterpart relation is such that there is a pre-substantial counterpart, while when we talk about the 'form' or the 'compound', there is no such counterpart in the past. However, the very notion of temporary identity strikes me as bizarre, and Aristotle seems to hold, at *Topics* VII.1, that the *mere possibility* of one thing's existing without another shows that the entities are not unqualifiedly numerically one.

Alternatively, we could say that *h* and *f* really did, despite appearance to the contrary, exist before the change in question. We then need to explain why it seems incorrect to say "Bucephalus existed before birth". We might say that when we use the name 'Bucephalus' we not only to refer an entity that does pre-exist the birth of Buchephalus, but conversationally implicate that the entity was a horse which is false. However, Aristotle does not seem to think that it is merely inapt to say that Bucephalus existed before birth, but that it is flatly false.

[21]   At 190a13ff, Aristotle claims that something persists in every case of change. On the other hand, Aristotle sometimes denies that matter, considered in itself, is a this (e.g. see *Metaphysics Z.3*). While any extended treatment is beyond the current project, I think that we can distinguish the way in which matter survives in generation from the way in which a substance survives in alteration. In the latter case a thing actually survives—we can identify a single entity that was there before and after change. In the former case, we cannot identify a single entity. For there to even be a *single thing* that we can talk about as surviving, form must be present. Furthermore, sameness of form is a necessary condition for sameness in number in the case of substances. SO, we can't really specify a single *thing* or *entity* that survives a change in substantial form. I am even reluctant to say that we can specify a single quantity of stuff, in the sense of quantity of stuff. If Aristotle thinks about quantities as nonsubstantial, and thinks that nonsubstances must always inhere in substances, then quantities must inhere in substances. If Aristotle thinks that the identity of nonsubstances requires the identity of the substances in which they inhere, which I think that he does, then we can't even have a single quantity

identifiable *this*, Aristotle takes the change in question to be a type of alteration or the coming to be of a quantity, quality, or other non-substance, rather than to be a case generation or the unqualified coming to be of a substance. The sense in which the matter involved in generation is the same before and after the change cannot be captured by holding that there is a single entity that survives.[22]

If there is no numerically singular entity that persists through substantial change, then Aristotle's comparison of substances with artifacts is misleading. For example, there does seem to be an identifiable lump of bronze that survives changes in shape, and the stone that a Hermes is made of was there before the sculptor chipped away the other stone surrounding it. Perhaps the difference can be located in the fact that Aristotle takes a genuine substance to have a single substantial form that both makes it a single entity and which makes it the entity that it is. There is no substantial form that makes some organic matter a *this*, and survives the destruction of one organism and the subsequent generation of another. Rather, the substantial form of the

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survive generation. Nevertheless, Aristotle seems to think that something underlies the change. We might try to define a notion of stuff survival that does not require any type of thing survival. However, I am no sure how to go about this task. For a view about matter similar to the one that I have in mind, see Gill (1989). For an alternative view about matter and mixture, see Fine (1992) and (1995). For more on views on quantities, see Helen Cartwright's "Heraclitus and the Bathwater" (1965) and "Quantities" (1970). In the case of nonsubstantial change, the underlying thing is a substance and the numerical sameness of many accidental forms can be accounted for by their all having a single underlying substance.

[22]   There is a big question to answer about what the sameness of the matter through substantial change amounts to, and I am not sure that any coherent answer is possible here. What I am suggesting is that a precondition for a true identity claim is that there be a specifiable individual that can be quantified over—there must be a *this something* in Aristotle's terminology. However, uninformed matter is not such a specifiable individual. Furthermore, if *a* and *b* have different substantial forms, then *a*≠*b*. Given that the substantial form comes into existence at the moment of generation, there is no specifiable entity before the change that is identical to the informed matter after the change. Nevertheless, Aristotle does seem to think that the stuff underlying the new substance has always been around. Nevertheless, to even attempt to call it 'that quantity of stuff' seems to involve the sort of individuation that requires a form. But on the assumption that each entity has only one form, there isn't a form that makes the matter a given quantity of stuff that survives the generation of a new thing, and another form that makes it a certain substance that fails to survive the generation of a new thing. So we cannot even say that a single quantity of matter survives generation. These implications may be strange, but I suspect that they would be more natural to someone who has a non-atomistic view about matter, and who does not think that there are identifiable bits of matter which have their identity apart from the things that they compose.

first organism made the matter a *this*, and then that *this* was destroyed and a new *this* with a new substantial form came into being. When we talk about the matter of the statue surviving the imposition of shape, we take the lump of bronze to already be a thing, and insofar as we take it to be a thing we take it to have a form. When we hold that the lump survives change of shape, we are treating the shape as a mere quality. Sculpting then can be thought of as altering the shape of a persisting thing, rather than as bringing a new substance into existence.[23]

On the other hand, Aristotle tells us that plants and animals come to be out of seed. The seed is the matter for the coming to be of the organism. However, the seed and the organism that comes to be from it are not identical. Rather the seed ceases to be, and the organism comes into existence. Furthermore, there is not some further *this* underlying both the seed and the organism such that it is the same thing before and after the organism comes to be.[24] There can, therefore, be no entity that is identical to the seed before the generation and to the organism after the generation. If we are to follow Charlton in identifying the matter, form, and hylomorphic compound, then we must hold that the matter in question does not preexist the generation of the compound. Such a view might work in the case of generation, where we might plausibly hold that the matter of an organism comes into existence with the organism.

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[23] This is not to deny that Aristotle takes statues to come into existence, but to deny that Aristotle takes statues to be substances. Just as a musician can come into existence by an underlying thing's (a man) coming to have an accident (musicality), so a statue comes into existence by an underlying thing's (this bronze) coming to have an accident (statue-shape). What I think is different about the coming to be of a true substance, like an organism, is that Aristotle does not take there to be a *thing* that underlies the change.

[24] We should not treat '__is a seed' and '__is a tree' as phase-sortals applying at different times to a single subject. On the other hand, it might be true to take '__is a shapeless blob' and '__is a statue' as phase-sortals that apply to lumps of bronze. I think that Aristotle would accept both the claim that the seed is potentially a tree, and that the blob is potentially a statue. However, on the sort of view that I favor, in the latter case we think that there is a single entity that will still be around when the lump actually constitutes a statue. In the former case, the thing that is potentially a tree will no longer be present when the tree is present.

However, things seem entirely different in the case of alteration. In such cases, something does survive to change.

When Aristotle talks about alteration, he thinks that we can identify a form, a privation, and an underlying substratum. In our example of an entity becoming musical, the man (*ho anthrôpos*) is the substratum or matter, the unmusical thing (*to mê mousikon*) is the privation, and the musical (*to mousikon*) is the form.[25] According to Charlton, the compound entities, the unmusical man (*ho mê mousikos anthrôpos*) and the musical man (*ho mousikos anthrôpos*) are akin to hylomorphic compounds. According to Charlton constitution is at work here as well. The matter (man) goes from constituting the privation (the unmusical) to constituting the form (the musical). Furthermore, Charlton thinks that such constitution implies the identity of the underlying thing, the form, and the compound. Aristotle does claim that that privation and the underlying thing involved in alteration are 'one in number':

> Having made these distinctions, it is possible to grasp (in all cases of coming to be if they are examined as we have said) that it is always necessary that some becomer underlie, and that this, if it is one in number, is not one in form. By 'in form', I mean the same as 'in account'. For being for a man is not the same as being for an unmusical thing. And the one remains, but the other does not remain. The thing that is not an opposite remains (for the man remains), but the not-musical and the unmusical do not remain, nor does the compound of the two, for example the unmusical man.[26] (190a13-21)

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25   On my view Aristotle sometimes refers to this entity with a masculine term '*mousikos*'. When '*mousikos*' is used in such a context it refers to a simple, the musical, and not to the compound of the musical with the man.

26   διωρισμένων δὲ τούτων, ἐξ ἀπάντων τῶν γιγνομένων τοῦτο ἔστι λαβεῖν, ἐάν τις ἐπιβλέψῃ ὥσπερ λέγομεν, ὅτι δεῖ τι ἀεὶ ὑποκεῖσθαι τὸ γιγνόμενον, καὶ τοῦτο εἰ καὶ ἀριθμῷ ἐστιν ἕν, ἀλλ' εἴδει γε οὐχ ἕν· τὸ γὰρ εἴδει λέγω καὶ λόγῳ ταὐτόν· οὐ γὰρ ταὐτὸν τὸ ἀνθρώπῳ καὶ τὸ ἀμούσῳ εἶναι. καὶ τὸ μὲν ὑπομένει, τὸ δ' οὐχ ὑπομένει· τὸ μὲν μὴ ἀντικείμενον ὑπομένει (ὁ γὰρ ἄνθρωπος ὑπομένει), τὸ μὴ μουσικὸν δὲ καὶ τὸ ἄμουσον οὐχ ὑπομένει, οὐδὲ τὸ ἐξ ἀμφοῖν συγκείμενον, οἷον ὁ ἄμουσος ἄνθρωπος. (190a13-21)

According to Charlton, Aristotle's claims about the numerical oneness entail that the man and the musical are identical—'*to mê mousikon*' and '*ho anthrôpos*' are simply different descriptions for a single object.

However, while Charlton might be right to claim that Socrates, the form of Socrates, and the matter of Socrates are identical, it is implausible to make the same claim about the man, the musical, and the musical man. While Aristotle tells us that the unmusical (*to mê mousikon*) and the man are one in number (*hen arithmôi*), he also tells us that they are not one in form '*hen eidei*' or one in account '*hen logôi*'. Furthermore, Aristotle tells us that the man survives the change, while the unmusical does not. It is also clear that the man cannot be identified with the musical (*to mousikon*). Aristotle clearly takes it to be the case that the man exists prior to becoming musical. But whatever simple individual Aristotle refers to as '*to mousikon*' does not exist before the man becomes musical. In this case, as in any case of alteration, the matter is a specifiable individual that persists through the change. But this very individual cannot be identical to anything that exists only when the change is completed. As far as the composite goes, the musical man seems to have two components, one of which existed before the change and the other of which did not. The whole compound, therefore, seems not to have existed before the alteration.

I agree with Charlton that we should take the relation between underlying thing and form to be a sort of constitution relation both in the case of substances and in the case of the products of alteration. However, only in the case of substances does it make sense to identify the matter with the thing constituted by that matter. Nevertheless, Aristotle does hold that the underlying thing and form in products of alteration are one in number, while denying that they are one in form or account. We must therefore recognize a variety of oneness in number that is not identity. I have argued elsewhere that Aristotle, in the *Topics* I.7, recognizes three varieties of

numerical sameness: accidental, proprial and essential.[27] In cases of accidental and proprial numerical sameness, Aristotle holds that things are one in number, but that they are not one in form or account. In cases of essential numerical sameness, there is oneness both in number and in form. Only essential numerical sameness conforms to Leibniz's Law according to Aristotle.[28] Things that are accidentally numerically the same can differ from each other in some respects.[29] However, I take it to be absolutely *definitive* of identity that it satisfy Leibniz's Law. Therefore, accidental numerical sameness is not identity.[30] Since essential numerical sameness requires sameness in form or account, the sort of numerical sameness holding between *to mê mousikon* and the particular man cannot be essential numerical sameness.[31] Furthermore, since we are dealing with a case where a thing changes with respect to an attribute, we are not dealing with proprial numerical sameness. It seems, therefore, that the man and the musical are accidentally one in number but non-identical.

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[27]   "Sameness and Oneness in Aristotle".

[28]   Aristotle states a particularly strong version of Leibniz's Law in the *Topics* VII.1. He holds that *x* and *y* are identical only if all the same things are predicated of *x* and *y*, and *x* and *y* are predicated of all the same things. Furthermore, Aristotle accepts the modally strengthened form of Leibniz's Law, if it is even possible for *x* and *y* to differ in any respect, then they will not be unqualifiedly numerically one. For some discussion of sameness in Aristotle: White, "Aristotle on Sameness and Oneness" (1971); Lewis, "Accidental Sameness in Aristotle" (1982); Matthews, "Accidental Unities" (1982); Pelletier, "Sameness and Referential Opacity in Aristotle" (1979); Spellman, "Referential Opacity in Aristotle" (1990).

[29]   In *SE* 24, Aristotle writes, "For only to things that are indistinguishable and one in being does it seem that all the same attributes belong; whereas in the case of a good thing, to be a good thing is not the same as to be about to be the subject of a question; nor in the case of a man approaching, or wearing a mask, is to be approaching the same as to be Coriscus, so that if I know Coriscus, but do not know the man approaching, it still isn't the case that I both know and do not know the same thing." (179b36-180a6) I deal with this passage at length in my chapter on numerical sameness in Aristotle.

[30]   This is a compressed version of an argument that I examine in greater detail in another paper, "Sameness and Oneness in Aristotle".

[31]   Sameness in form or account *plus* sameness in number seems necessary for what Aristotle calls sameness in substance or being. Charlton, therefore, seems mistaken to hold that oneness in number without oneness in form can be construed as identity.

It is deeply philosophically problematic to hold that the man is identical to the non-musical.[32] Identity follows Leibniz's Law, but Aristotle tells us that the man remains while the unmusical does not remain. I think that it is plausible to hold that '___remains' is a transparent context. It seems that "*x* remains" is equivalent to "*x* continues to exist". If '___continues to exist' is not an extensional context, then it is hard to see what context would be extensional. Therefore, if Aristotle takes "The man remains" to be true, but "The unmusical remains" to be false, then he cannot take 'the man' and 'the unmusical' to indicate the same object.[33] So the unmusical and the man are not identical. However, Aristotle does think that these objects are numerically one in some sense.[34] I think that Charlton is right to think of the relation between the man and the musical as a sort of constitution, but that constitution requires only accidental numerical sameness rather than identity. Entities like *to mousikon* will be accidentally numerically the same as the substances which underlie them. Furthermore, any two entities with the same underlying substance will be accidentally numerically the same as one another.

Gareth Matthews agrees that the musical (*to mousikon*) and not-musical (*to mê mousikon*) are accidentally numerically the same as, but not identical to, the man. However, Matthews seems to take entities like the musical to be what he calls "kooky

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32   The problems that arise in this context are similar to problems that beset any position on which constitution is held to be identity. For some defenses of the claim that constitution is not identity, see Wiggins (1968), Wiggins (1980), Wiggins (2000), and Johnston "Constitution is Not Identity" (1992).

33   Once again, this is a compressed version of an argument that I go into in more detail elsewhere.

34   The relation of accidental numerical sameness is such a relation: if *x* and *y* are accidentally numerically one then they are coincident without being identical. I think that there is a straightforward sense in which spatiotemporally coincident objects can be said to be numerically one, although this might involve a loose and popular sense of 'one'. A statue need not be *distinct* from the lump of matter that constitutes it, even if we do not hold that the statue and the lump are identical. Even if these are (strictly speaking) two objects, they seem to be caught up with each other in a certain way, and to go through the world as a unit. When we count the number of material things that there are on a table, we don't count *both* the statue and the lump. However, I do not take this fact to entail that the statue and the lump are identical. It may be that in the counting of material objects, we break the world into equivalence classes using coincidence rather than identity.

objects". Furthermore, kooky objects seem to be substance-accident compounds.[35] There is a problem with the claim that *to mousikon* is a kooky object conceived of as a compound entity. Aristotle tells us that *to mousikon* is one of the simple elements of change, but kooky objects seem to be compound rather than simple. In fact the compound entity, the musical man (*ho mousikos anthrôpos*), seems to be a kooky object. However, Aristotle tells us "The musical man [*ho mousikos anthrôpos*] is composed out of man and musical in some way." [36] (190b20-22) '*To mousikon*' in this passage seems to refer to a simple entity that is a component of the musical man.[37]

'*To mousikon*' then refers to a simple individual that is numerically the same as, but non-identical to, the substance that underlies the change from non-musical to musical. When the man goes from being unmusical to being musical, one and the same underlying thing goes from underlying a particular non-musical to underlying a particular musical. The particular musical and non-musical, therefore, are both non-substantial and particular. It seems, therefore, that Aristotle accepts entities in his discussion of alteration that are non-substantial and are not multiply instantiable. Furthermore, it seems that each of these entities will be a token of a fully determinate non-substantial type, where the type in question could have multiple tokens. What

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[35]   To use the container-metaphysics language adopted by Matthews and Cohen, a substance is like a container, while a kooky object is like a container with certain contents. A container is not identical to the container-*cum*-contents, but neither are they wholly distinct. Accidental sameness captures this relation. My suggestion is that the comparison between the man and the musical is between the container and the contents of the container. The container-*cum*-contents is analogous to the musical man. Matthews and Cohen "The One and the Many" (1968), and Matthews "The Enigma of *Categories* 1a20ff and Why it Matters" (1989) "Container Metaphysics According to Aristotle's Greek Commentators" (1991).

[36]   The Greek in this passage is "σύγκειται γὰρ ὁ μουσικὸς ἄνθρωπος ἐξ ἀνθρώπου καὶ μουσικοῦ τρόπον τινά·" While '*mousikou*' is morphologically either masculine or neuter. I think that the sense of the passage requires, however, that the entity picked out by '*mousikou*' is the simple entity picked out by '*to mousikon*' rather than something composite.

[37]   However, notice that the composition involved here is of a rather interesting sort. While '*to mousikon*' is not a compound, I will argue that it is also not an ontologically independent component of the compound. Rather, *to mousikon* is a nonsubstantial particular, and is ontologically dependent on the substance in which it inheres. Therefore, it is not possible for *to mousikon* to exist without the musical man's also existing. Given the ontological inseparability of the compound musical man from the component musicality, the difference between my view and Matthews' seems minimal.

should we call the relation between the fully determinate type and the particular token of that type that comes into existence as a result of alteration? The relation seems to be nothing other than the said-of relation discussed in the *Categories*. Similar reasoning will apply in the case of any fully determinate non-substantial universal. But that means that fully determinate universals *are* said-of something. They cannot, therefore, be the entities that Aristotle takes to be inherent in a subject but not said-of any subject.

For comparison, take *to mousikon* as it has been characterized so far. This entity is clearly not said-of anything. Furthermore, it makes good sense to say that this entity inheres in the particular man with which it is numerically one. *To mousikon* then seems to be a better candidate for being an entity that is in a subject, but not said-of any subject. *To mousikon* is an NSP in the sense at issue in the *Categories*.

Aristotle takes the simple entities involved in alteration, the non-musical and musical, to be NSPs. But what are such entities like, and how should we understand the relation that such entities stand in to substances? Are NSPs, for example, concrete or abstract? I think that the abstract-concrete distinction can be pretty hard to get a handle on.[38] NSPs seem to be abstract in the way that Donald Williams and Keith Campbell take tropes to be abstract.[39] In order to focus on the NSP-musicality, we must *abstract* from all the other attributes that are coincident with that NSP. We need to ignore certain entities to concentrate on the NSP. Notice, however, that on this way of understanding what it is to be abstract, substances will turn out to be equally

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[38] Rather, it seems that there are several different distinctions that get lumped together under the 'abstract-concrete' label. For example, there is the distinction between what is in space-time and what is not, the distinction between what can enter into causal relations and what can't, the distinction between what is immediately present to the observer and what can be conceptualized only after a process of abstraction, the distinction between what is general and what is particular, and probably a bunch of other distinctions that I am omitting.

[39] Donald Williams "The Elements of Being" (1953). Keith Campbell "The Metaphysic of Abstract Particulars" (1981) and *Abstract Particulars* (1990).

abstract. To think about the primary substance, this human, we abstract from the qualities, quantities, relations that inhere in this human.

Aristotle seems to take both substantial and non-substantial particulars to be involved in causal interactions, which is often taken as a hallmark of concreteness.[40] As far as location in space and time goes, Aristotle seems to conceive of both place and time as non-substantial categories. On the account that I am giving, this means that there will be non-substantial particular places and times that inhere in individual substances. The truthmaker for the claim that a substance is in a place will be the fact that a place-NSP inheres in that substance. The truthmaker for the claim that another NSP, say an instance of pallor, is in a place will be the fact that the pallor inheres in a substance in which a certain place-NSP also inheres. The same goes for time. It seems that the accidents of concrete substances have a good claim to being located where those substances are located, and thus count as in space and time if the substances do.

I think that it is best to think of both NSPs and particular substances as *slim particulars*.[41] Both this musical and this human being are individual things, and each has an intrinsic nature. However, very little is included in the intrinsic nature of each particular. Considered just in itself, a human being is a rational thing, an animal, a living being, and perhaps a body. Similarly, considered just in itself, *to mousikon* is an

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[40]   For example, in *Physics* II.3 Aristotle seems to hold that the sculptor rather than Polyclitus is the cause of the sculpture, and the sculptor seems to be a simple entity contrasted with the compound, Polyclitus the sculptor.

[41]   The term "slim particular" is inspired by Armstrong's discussions of *thick* and *thin* particulars. However, Armstrong seems to think that what are thick and thin are not entities, but ways of conceiving of entities. This position is clearest on the account that Armstrong gives in *A World of States of Affairs* (1997), in which he holds that states of affairs are ontologically fundamental, and that both particulars and universals are constituents of states of affairs only in the sense that we can abstract both a universal element and a particular element from each state of affairs. These elements, however, do not have any existence independent of their presence in states of affairs. When we hold that a single particular (or universal) is present in many states of affairs, we are grouping the states of affairs into similarity or equivalence classes. On my interpretation of Aristotle, each particular is a thing that has a nature, but the nature of each particular is exhausted by what is said-of that particular.

instance of a certain kind of knowledge.[42] In general, when we talk about what a thing is in itself, we indicate what is *said-of* that thing. On the other hand, the fact that this man is musical consists in the holding of a relation between two things, this man and this musical.[43]

I suggest that the relation between the simple entities involved in alteration just is the inherence relation discussed in the *Categories*. So, we can describe our example alteration as follows: we begin with an NSP non-musicality inhering in a particular man, and end with an NSP musicality inhering in that particular man.[44]

We know from the *Physics* that *to mousikon* and the substance underlying it together compose the musical man. I have also argued that *to mousikon* and the underlying man are accidentally one in number, without being identical, and suggested that this sort of coincidence might be described by claiming that the man constitutes *to mousikon*. We also know from the *Categories* that this instance of musicality could

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[42]   I try to make more precise what it means to consider something just in itself in chapter 10. Roughly speaking, I argue that Aristotle supports a view on which, when we claim that Socrates is a human, the truthmaker does not involve Socrates' standing in a relation to any other entity. Rather, the truthmaker is Socrates himself. On the other hand, whenever we predicate anything nonessential of Socrates, including his propria, the truthmaker does involve the inherence of something in Socrates. Furthermore, I argue that nonsubstantial particulars are relational entities, in that part of their identity consists in their standing in the inherence relation to the substances in which they inhere. I do not think that this view conflicts with the claim that the said-of relation is fundamental. The said-of relation is fundamental as a relation between universals and particulars. However, the fact that Socrates is human, and the fact that human is said-of Socrates are different facts. The first is a purely nonrelational fact, while the second consists in a relation between a whole and one of its parts.

[43]   We might also say that the truthmaker for the claim that the man is musical is the composite entity, *ho mousikos anthrôpos*. I do not think that Aristotle distinguishes between states-of-affairs like the man's being musical (which *we* might take to be abstract), and composites like the musical man (which *we* might be more apt to be concrete).

[44]   The nature of an NSP non-musicality is a bit tricky to explicate. I do not think that Aristotle accepts the existence of negative entities. Rather, when we have a non-musicality, we have an entity which has an intrinsic nature of its own. This entity is located in a contrariety class with musicality (two NSPs will be in the same contrariety class iff the universals immediately said-of the NSPs are such that they are members of the same genera). Where we have a change from non-white to white, the non-white is an NSP of a certain determinate dark color. Aristotle holds that all changes occur within such contrariety classes, and involve a substance's going from underlying one such contrary to its underlying another such contrary. I think that the account of contrariety involved will also allow us to give truthmakers for a large class of Aristotelian denials. "Socrates is not pale" is made true by the fact that a certain NSP that is in Socrates is such that a contrary of pale is said-of it.

not have existed independently of the substance in which it inheres. Furthermore, if the existence of this musicality implies the existence of the man, then it equally implies the existence of the musical man. Therefore, we cannot take the instance of musicality and the substance in which it inheres to be two independent components of the musical man. While the substance could exist without the instance of musicality, the converse is not the case.

We can draw, therefore, a distinction between the substance and the entities with which is accidentally numerically the same. The substance underlies the instance of musicality, and the musicality seems to count as the entity that it is only because of the substance in which it inheres. Numerical sameness between various accidents is explained by the fact that they all inhere in a single substance. The numerical unity of the substance itself is not explained by is relation to its accidents. A substance, therefore, is ontologically prior to the NSP by being a cause of being for the NSP in a way that the NSP is not a cause of being for the substance. Furthermore, I will argue that an NSP is a relational entity in that it is essential to it that it bear a relation to the substance in which it inheres. I return to these issues in chapters 9 and 10.

I have argued that Aristotle is committed to the existence of non-substantial particulars by his analysis of alteration in the *Physics*. I have also argued that, according to Aristotle's definition of inherence at 1a24-25, inherence requires ontological dependence. However, the fact remains that Aristotle seems to hold that nonsubstantial universals can inhere in particular substances at 2a34ff. In the next chapter, I turn to two suggestions for reconciling Aristotle's seemingly contradictory remarks about inherence. These suggestions differ from both Frede's and Owen's interpretations in that they accept an interpretation of *Categories* 1a24-25 on which inherence implies ontological dependence.

CHAPTER 6

OTHER ATTEMPTS TO RECONCILE ARISTOTLE'S CLAIMS ABOUT

INHERENCE

Section 6.1: Overview of Chapter

For the reasons that I have discussed in the preceding chapters, I think that

Aristotle accepts the existence of non-substantial particulars, and takes these entities to

inhere in particular or primary substances. I have further argued that we should reject

interpretations of the definition of inherence at 1a24-25 on which an entity can inhere

in something on which it does not ontologically depend. Inherence implies ontological

dependence. It is, therefore, troubling that Aristotle seems to tell us at 2a34ff that non-

substantial universals can inhere in particular substances. I have claimed that we

cannot eliminate the conflict between 2a34ff and 1a24-25 by reinterpreting the latter

passage. In this chapter, I examine two other ways in which we might try to rescue

Aristotle from contradiction. In section 6.2, I examine an attempt by Terence Irwin to

offer an alternative interpretation of 2a34ff on which Aristotle does not say anything

there that contradicts the definition of inherence at 1a24-25 taken as Ackrill takes it. In

sections 6.3 and 6.4, I examine two attempts to reconcile Aristotle's claims in the two

passages which hold that Aristotle takes 'is in' to be ambiguous.[1] In section 6.3, I

examine Michael Wedin's interpretation according to which Aristotle thinks that

nonsubstantial individuals and nonsubstantial universals can both inhere in substantial

particulars, but that only the former need be ontologically dependent on the substantial

particulars in which they inhere. In section 6.4, I turn to a suggestion by James

Duerlinger that Aristotle is using 'is in' with different senses in the conflicting

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[1]   Technically we will see that Wedin holds that 'is in' has a single sense, but that this single
sense is disjunctive. I do not think that there is a great deal of difference between holding that a phrase
has a plurality of senses, and holding that a phrase has one disjunctive sense.

passages. I argue that none of the suggested alternative solutions works, and that we
are committed to holding that Aristotle makes a mistake in his claim at 2a34ff that a
universal nonsubstance inheres in a particular substance. I examine the source of this
mistake further in subsequent chapters.

Section 6.2: Irwin's Reinterpretation of 2a34ff

Terence Irwin suggests an alternative interpretation of 2a34ff according to
which Aristotle does not claim in that passage that a universal inheres in a particular
substance. In this section, I examine some ways of trying to flesh out Irwin's
suggestion and conclude that each faces significant difficulties.

Irwin suggests that we reinterpret what Aristotle means by the claim that the
color is 'in some body' (*en tini sômati*) at 2b1.[2] It might be helpful to have the passage
in front of us.

> Again, color is in body therefore also in an individual body. For if it
> were not in some individual body it would not be in body at all. (2b1-2;
> Ackrill's translation)
>
> πάλιν τὸ χρῶμα ἐν σώματι, οὐκοῦν καὶ ἐν τινὶ σώματι· εἰ γὰρ μὴ
> ἐν τινὶ τῶν καθ' ἕκαστα, οὐδὲ ἐν σώματι ὅλως·
>
> *Palin to chrôma en sômati, oukoun kai en tini sômati; ei gar mê en tini
> tôn kath' hekasta, oude en sômati holôs.*

Ackrill renders '*en tini sômati*' as 'in an individual body', and '*en tini tôn kath'
hekasta*' as 'in some individual body'. On Ackrill's way of construing the passage,
'Color is *en tini sômati*,' will be true if and only if there is a particular body (a primary
substance), and the universal color inheres in it. The following interpretation of the
argument at 2b1-3 is suggested by Ackrill's view:

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[2]   The initial suggestion for reinterpreting '*en tini sômati*' in this way can be found in a footnote
in Terence Irwin's *Aristotle's First Principles* (1988), pp502-503.

(A1) Inheres(*color, body*)[3]

(A2) (¬∃x(x is an individual body & Inheres(*color*,x)) ⊃ ¬Inheres(*color, body*))

∴(A3) ∃x(x is an individual body & Inheres(*color*, x))

However, given that for any particular body that you choose, the universal color can exist without it, we can't say that the universal *color* inheres in any particular body. (A3), therefore, conflicts with the traditional interpretation of the definition of inherence. Ackrill concludes that Aristotle is being careless when he asserts (A3).

The core of Irwin's interpretation is to claim that (A3) is not an accurate way to understand what Aristotle says at (2b1-3). Irwin points out that while indefinite pronoun, '*tis*', can be used to indicate that a particular is being talked about, the same pronoun can be used to convey indefiniteness. Instead of following Ackrill and taking the phrase, '*en tini sômati*' to mean 'in some individual body', Irwin claims that we should take the phrase to mean 'in some body or other'.[4] Accordingly, Irwin takes the argument in 2b1-3 to run as follows:

(I1) Inheres(*color, body*)

(I2) If *color* did not inhere in some body or other, then *color* would not inhere in *body*.

∴(I3) *Color* inheres in some body or other.

Furthermore, Irwin claims that (I3) doesn't have the problematic implication that there is a particular body that *color* inheres in. As things currently stand, it is not precisely clear how we should take (I2) and (I3). What does it mean for *color* to be in some

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[3]   This is to be read, 'The universal *color* inheres in the universal *body*.' I use italics when I am talking about the universal.

[4]   Irwin suggests a similar alternative reading of '*en tini tôn kath' hekasta*'. Instead of taking this to mean 'in some particular (body)', we should take it to mean 'in some or other particular (body)'.

body or other, without *color's* being in this or that particular body? In what follows, I examine a few different ways of construing such a claim.[5]

Irwin criticizes Frede's use of 2a34-b7 to argue that inherence does not entail ontological dependence, saying "[Frede's] argument requires colour to be inherent in each particular body (e.g. this cube) rather than simply in some body or other (this cube or that sphere or…). [The latter] is how we must take 'the individual man' in 2a36-b1."[6] J.L. Ackrill translates the latter passage as follows:

> All the other things are either said of the primary substances as subjects or in them as subjects. This is clear from an examination of cases. For example, animal is predicated of man and therefore also of the individual man (*kata tou tinos anthrôpou*); for were it predicated of none of the individual men (*kata mêdenos tôn tinôn anthrôpôn*), it would not be predicated of man at all.[7] (2a34-b1)

Irwin points out that in 2a34-b1 Aristotle does not take the fact that animal is said-of man to require the existence of any particular individual man. Rather the fact that animal is said-of man requires only that there be some man or other, such that man is said of him. What is at issue here can be expressed as a difference in scope.

(i) $\exists x \Box$ (**O**(*animal, human*) $\rightarrow$ (Hx & **O**(*animal*,x))).

(ii) $\Box$(**O**(*animal,human*) $\rightarrow$ $\exists$x(Mx & **O**(*animal*,x))).[8]

Irwin claims that Aristotle commits himself only to (ii) and not to the stronger (i).[9]

Irwin is clearly right about 2a34-b1. At first glance, it seems that Irwin suggests we

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[5]   Irwin (1988) does not go into more detail about how we are to take the claim that color is in some body or other without there being a particular body that color is in. What follows is a development of a few things that Irwin might mean, which have been suggested in conversation.

[6]   Irwin (1988), p503.

[7]   "τὰ δ' ἄλλα πάντα ἤτοι καθ' ὑποκειμένων λέγεται τῶν πρώτων οὐσιῶν ἢ ἐν ὑποκειμέναις αὐταῖς ἐστίν. τοῦτο δὲ φανερὸν ἐκ τῶν καθ' ἕκαστα προχειριζομένων· οἷον τὸ ζῷον κατὰ τοῦ ἀνθρώπου κατηγορεῖται, οὐκοῦν καὶ κατὰ τοῦ τινὸς ἀνθρώπου, – εἰ γὰρ κατὰ μηδενὸς τῶν τινῶν ἀνθρώπων, οὐδὲ κατὰ ἀνθρώπου ὅλως·" (2a34-b1)

[8]   '$\Box$' is to be taken as 'necessarily', '**O**(a,b)' is to be taken as 'a is said-of b', and 'Ma' as 'a is an individual man'. I use '$\Box$' to capture the counterfactual flavor of Ackrill's translation which I take to accurately represent Aristotle's intent.

[9]   Furthermore, in Aristotle's claims about the existential dependence of everything on primary substances, it makes sense to take him to hold, not that there is some particular primary substance such that nothing could exist without it, but that the existence of anything other requires the existence of

apply the same type of treatment to the claim that the universal *color* is *en tini sômati*.
However, we will not be able to make Aristotle's statements at 2b1ff consistent with
his definition of inherence by following the same strategy that we did with his
statements about the said-of relation. To see why not, look at (v) and (vi) below.

(v) $\exists x \Box (I(color,body) \rightarrow (Bx \& I(color,x)))$.

(vi) $\Box (I(color,body) \rightarrow \exists x(Bx \& I(color,x)))$.[10]

(vi) is certainly more plausible than (v), but (vi) is still not consistent with the
definition of inherence. Say that (vi) is true, and that *color* does inhere in *body*. Then
there is a particular body such that *color* inheres in it, and we have the same problem
that we began with. Simply reading (I2) as (vi), therefore, will not make 2b1ff
consistent with the claim that inherence entails ontological dependence. If Irwin's
suggestion that we interpret '*en tini sômati*' as 'in some body or other' is to do any
work, then it needs to do more than get us to (vi).

Take the following sentence:

(C1) *Color* is *en tini sômati*.

We need a way of reading (C1), which does not entail that there is a particular body,
such that *color* is in it. On such a reading, 'is in' will exhibit some of the behavior of
an intensional transitive verb like 'seeks'. Take the following sentences for the
purpose of comparison.

(D1) Diogenes finds an honest man.

(D2) Diogenes seeks an honest man.

(D1) does entail that there is a particular honest man such that Diogenes finds him.
The only possible reading of (D1) is what Quine calls a relational reading and others

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some primary substance or other. In other words, (iii) is the correct way to take Aristotle's claims about
the existential dependence of things on primary substance.

    (iii) $\Box \forall y(y \text{ exists} \supset \exists x(x \text{ is a primary substance} \& x \text{ exists}))$.

    (iv) $\forall y(\exists x(x \text{ is a primary substance}) \& \Box(y \text{ exists} \supset x \text{ exists}))$.

[10]   Read '$\Box$' as 'necessarily', '**I**(a,b)' as 'a inheres in b', and 'Ba' as 'a is an individual body'.

have called a specific reading. (D1) asserts that the *finding* relation holds between Diogenes and a specific honest man. By contrast, (D2) is not naturally taken to entail that there is some particular honest man such that Diogenes is looking for him.[11] Rather, Diogenes will be successful in his search if he finds any honest man at all. Quine calls this reading of (D2) *notional,* and others have called it *unspecific* or *non-specific.*[12] On the non-specific reading, (D2) does not assert that there is some particular man such that the *seeking* relation holds between Diogenes and him. One sign that a transitive verb is intensional is that a sentence in which the verb takes a quantifier-phrase as its object admits of a notional or non-specific reading.

On Irwin's suggestion (C1) is supposed be interpreted along the same lines as the non-specific reading of (D2). In this way 'is in' acts like an intensional transitive verb. *Color* is in some body or other, but it is not the case that there is any particular body in which *color* inheres. It is interesting to point out that 'is in' does not exhibit some of the other behavior typical of intensional transitive verbs. For example, where $\ulcorner \beta \urcorner$ is a singular referring expression, $\ulcorner \alpha$ is in $\beta . \urcorner$ does entail that a referent of $\ulcorner \beta \urcorner$ exists. On the other hand, 'Diogenes seeks Pegasus,' does not entail that Pegasus exists. Furthermore, while co-referring expressions can be substituted *salva veritate* for one another after 'is in', they will not always be substitutable after 'seeks'.

A better analogy with (C1) might, therefore, be:

(O1) The garbage must be taken out by someone.[13]

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[11]   Notice that (D2) *could* be used to express that there is a particular honest man that Diogenes is looking for. The important point for our purposes is that the notional or non-specific reading of (D2) is possible.

[12]   See Quine's "Quantifiers and Propositional Attitudes" (1956) and *Word and Object* (1960). For the use of 'unspecific' see Graeme Forbes' "Intensional Transitive Verbs" in the *Stanford Encyclopedia of Philosophy* Online (2004). 'Non-specific' is used by Montague in "On the Nature of Certain Philosophical Entities" (1960) and "The Proper Treatment of Quantification in Ordinary English" (1973). See also Dowty, Wall and Peters *Introduction to Montague Semantics* (1981).

[13]   I recall that Terry Irwin suggested this analogy in conversation. However, the specific treatment of 'is in' that I take to follow from this analogy was not suggested by Irwin and I am not certain that he would advocate this treatment of 'is in'.

(O1) is naturally construed non-specifically. Rather than asserting that any particular

person has the obligation to take out the garbage, it seems to say that it is obligatory

that the garbage be removed but that anyone can discharge this obligation. Compare

(O1) with (O2).

(O2) The garbage must be taken out by Bob.[14]

It is possible to see (O2) as asserting that a relation, say the *obliged to perform*

relation, holds between something, say an action type, and Bob.[15] Furthermore, on

this reading "The garbage must be taken out by Bob," does seem to entail that Bob

exists, and this sentence seems to admit of a reading on which co-referring expressions

can be substituted *salva veritate* for 'Bob'.[16] On the other hand, notice that we cannot

read (O1) as saying that there is some thing that stands in the *obliged to perform*

relation to the action type in question.

When Aristotle claims that *color* inheres in *body*, he is asserting that the

inherence relation holds between two entities. However, if Aristotle intends (C1) to

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[14]   The analogy to the case of inherence would be closer if we could replace (O1) and (O2) with
(O1') and (O2').
          (O1') Someone is obliged to take out the garbage.
          (O2') Bob is obliged to take out the garbage.
I have hesitated to use (O1') in my example, however, because it doesn't seem that the notional or
nonspecific reading of (O1') is possible. My intuitions here are muddy, however. In the more
colloquial, 'Someone's gotta take out the garbage,' I am more inclined to think that both a notional and
a relational reading are possible. It is similarly difficult for me to hear the notional reading in the Greek
sentence, '*Chrôma en tini sômati esti.*' In other sentences using '*en tini + einai,*' I find it almost
impossible to hear a notional reading. For example, it is as difficult for me to hear the non-specific
reading of '*Sôkratês en tini kapêleïô esti,*' as it is to hear the non-specific reading of 'Socrates is in
some tavern.' However, because my linguistic intuitions about Greek are even muddier than my
intuitions about English, and since Aristotle is using '*en tini + einai*' as a bit of technical jargon, I won't
base very much on these intuitions.
[15]   I do not know whether this is ultimately a plausible analysis of (O2). It is much more natural to
take (O2) as involving a modal operator and a proposition—it is obligatory that Bob take out the
garbage. However, I use (O2) more for the sake of the analogy with inherence than as a plausible
interpretation of obligation statements.
[16]   Provided that the sentences resulting from the substitution are read *de re*. So, "The garbage
must be taken out by the tallest person in the room," has to be read as "There is a thing that is the tallest
thing in the room and the garbage must be taken out by it." The *de dicto* reading "It must be the case
that the garbage is taken out by whoever is the tallest person in the room," will be quite a different
matter. We will look as this example more closely below.

have a non-specific reading, then he cannot take the sentence to assert that the inherence relation holds between *color* and a particular body. We should then ask what Aristotle does mean to assert with (C1). In broad outline, there are two possible ways to go.

First of all, Aristotle might deny that the sentence (C1) asserts the holding of the inherence relation between *color* and anything at all. (C1)'s surface form is misleading and (C1) is an elliptical way of saying something more complex. If this line of interpretation is right, then we should be able to reveal the true logical form of (C1) more clearly.

On the other hand, Aristotle might hold that (C1) does assert that inherence holds between *color* and something, but that this thing is not a particular body. If we endorse this line of interpretation, then we need to specify the sort of object in which (C1) says *color* inheres. In the remainder of this section, I examine each of these ways of fleshing out Irwin's interpretation of Aristotle. I will proceed by looking at some ways in which we might interpret clearly non-specific cases such as (D2) and (O1), and argue that these strategies cannot be adapted to fit (C1). In the end, I do not think that 2a34ff can be construed non-specifically. But if there isn't a plausible way to give this passage a non-specific reading, then we cannot save Aristotle from the charge of contradiction by Irwin's suggested way of reinterpreting 2a34ff.

I will start by examining a few attempts to paraphrase (C1) so that it does not require the holding of the inherence relation between entities. It will help us to think about some ways in which philosophers of language have suggested that we paraphrase (D2) or (O1). I will begin with (D2). Perhaps (D2) should be read, not as containing the two-place predicate '__seeks__', but as containing a one-place predicate as in 'Diogenes is honest-man-seeking.' The sentence then claims, not that Diogenes stands in a relation to something, but that Diogenes has a certain property,

which we can call the *honest-man-seeking-property*.[17] If we adopt this sort of strategy for (D2), then we have to hold that there is a different property being ascribed to Diogenes for each sentence reporting that he seeks something.

How could we adapt this sort of paraphrase to (C1)? We would need to say that (C1) ascribes the *body-inhering* property to *color*. So (C2) better reveals what is being asserted by (C1).

(C2) *Color* has the body-inhering property.

Similarly, when we say that *knowledge* is in some soul, we will be ascribing the *soul-inhering* property to *knowledge*, as in (C3).

(C3) *Knowledge* has the soul-inhering property.

What sort of ontological analysis are we supposed to give of (C2) or (C3)? At first glance, we might say that (C2) and (C3) are just roundabout ways of saying that *color* or *knowledge* stand in the inherence relation to something. If this something is supposed to be a particular body or soul, then we are back where we started. If this something is the universal *body* or *soul*, then Aristotle is really saying only that one universal inheres in another. This sort of line will be discussed when I look at alternative relational readings of (C1); it violates the spirit of the current strategy of paraphrase.

If (C2) and (C3) are not simply odd ways of saying that *color* or *knowledge* bear the inherence relation to something, then they must be thought of as really ascribing a monadic property to *color* and *knowledge*. What sort of ontological

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[17]   See Quine (1960) especially §44, where Quine tells us that the form of a belief-sentence should not be represented as 'Rab' but rather as 'Fa' where 'F' is a complex general term. Propositional attitude verbs are not to be represented as relations, but as operators which given a sentence yield complex general terms. The logical form of a sentence like 'Diogenes believes that there are no honest men' becomes Believe["There are no honest men."]$_{Diogenes}$. We could treat 'seeks' as a similar operator, which is basically the line that I am currently talking about. Instead of operating on sentences, the 'seeks'-operator will yield a complex term given a term as input. Alternatively we can follow Quine in first paraphrasing 'seeks' in terms of the propositional attitude 'endeavors that', which can then be treated as an operator. Montegue (1960) criticizes Quine's approach, claiming that a language with as many primitive one-place predicates as this would be unlearnable. See also Dowty et. al. (1981).

analysis are we to give of (C2) and (C3) if they are monadic property ascriptions? Notice that we will not be able to analyze (C2) and (C3) in terms of the inherence of an entity corresponding to 'body-inhering' in *color*. First of all, doing so would force us to hold that a non-substantial universal was the subject of the inherence relation. Second, Aristotle doesn't seem to recognize the existence of an entity corresponding to 'body-inhering' in any of the categories.

However, if 'body-inhering' doesn't correspond to any entity, then we are forced to say that 'body-inhering' is a fundamental predicate, along with a host of similar fundamental predicates. Things get even worse once we allow that individual substances are sometimes subjects of inherence. For example, take (C4).

(C4) This pallor is in Socrates.

Unless 'is in' means something different in (C4) than it does in (C1), we will have to say that the latter sentence ascribes the *Socrates-inhering* property to this pallor. Again *Socrates-inhering* will have to be a fundamental property not susceptible of further analysis. We will end up with a complex series of fundamental properties that cannot be analyzed in terms of the scheme outlined in the *Categories*. We might be able to make such an interpretation work, but we could do so only at the expense of attributing an ontological framework to Aristotle in addition to the one outlined in the *Categories*. I conclude that we can't paraphrase (C1) as predicating a monadic property of *color*.

We might analyze (C1) as asserting that a relation holds between entities, but that this is not the *inherence* relation. For example, Quine suggests an analysis of (D2) as:

(D2*) Diogenes endeavors that there is an honest man found by Diogenes.

We can take (D2*) to attribute a propositional attitude to Diogenes, and think about this as a matter of Diogenes standing in a relation to a proposition.[18] (D2*) offers us an analysis of *seeking* in terms of *endeavoring* and propositions about *finding*. If we want all of our claims about seeking to be analyzed in the same way, we would also say that "Diogenes seeks Plato," asserts that the *endeavoring* relation holds between Diogenes and the proposition that Diogenes finds Plato. Notice that on this line, we are effectively attempting to analyze away the *seeking* relation. Once we have the relations of *finding* and *endeavoring* in our ontology, we gain nothing useful by adding the *seeking* relation.

However, I do not see how this strategy can be adapted to provide an analysis of (C1). It seems at least *prima facie* plausible to hold that uses of 'seeks' can be analyzed in terms of propositional attitudes, because seeking is connected to various intentional states of agents. Inherence on the other hand doesn't seem to have anything to do with relations to propositions or intentional states of agents. Any attempt to reinterpret (C1) in a way similar to the suggested reinterpretation of (D2) in terms of propositional attitudes seems doomed to failure.

Therefore, I don't think that either of the suggested analyses of (D2) provides any guidance in finding a non-specific reading of (C1). Perhaps we will do better by thinking about (O1). We might analyze (O1) as (O1*):

(O1*) It is obligatory that there is someone who takes out the garbage.
(O1*) does not assert a relation between things at all. Rather, it is natural to see 'it is obligatory that' in (O1*) as a kind of modal operator on the proposition that there is someone who takes out the garbage. (O1*) can be seen as ascribing a property to a proposition. In other words, (O1*) is most naturally construed as a *de dicto* deontic

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[18]   As I mention above, it does not seem that Quine would want to rest easy with this view. He will go further and eliminate reference to propositions.

claim. We can contrast (O1*) with the following *de re* deontic claim, which can be seen as the existential generalization of (O2) above.

(O3) There is someone such that it is obligatory that he take out the garbage.

The difference between (O1*) and (O3) can be represented as a difference in the scope of the 'it is obligatory that' operator and the existential quantifier. Where '**O**' is the obligatory operator, 'Txy' means 'x takes out y' and 'g' names the garbage.

(O1*) **O**($\exists$x(Txg))

(O3) $\exists$x(**O**(Txg))

If we accept this sort of analysis of (O1), then we hold that the truth of (O1) can be analyzed in terms of quantification, the *taking-out* relation, and whatever is involved in the truth of an application of the '**O**' operator to an arbitrary sentence. We might say, for example, that $\ulcorner$**O**$\varphi\urcorner$ is true if and only if $\ulcorner\varphi\urcorner$ is true in every obligation world, where an obligation world is a possible world accessible from the actual world in which everything that is supposed to be done is done.[19] Notice that whereas (O1*) contains separate expressions for the obligatoriness operator and the taking out relation, (C1) contains only the phrase 'is in'. If we want to treat (C1) along the same lines as (O1*), we will need to say that the phrase 'is in' can be analyzed into an operator and a relation. If this is the case, then we might render (C1) as (C1*). I will assume in what follows that the most plausible candidate for a modal operator will be something like 'It is essential to __ that' or 'It is necessary that', the most plausible candidate for the relation will be a generic metaphysical predication relation. Let's use '$\square$' for the operator and '**R**' for the relation.

(C1*) $\square\exists$x(x is a particular body and *color* bears **R** to x.)

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[19]   I don't know whether this sort of analysis has any plausibility, but it will serve for the sake of analogy.

(C1*) is a *de dicto* claim with which we can contrast the *de re* (C5). (C5) corresponds to the specific reading of (C1):

(C5) ∃x (x is a particular body and □(*color* bears **R** to x.))

If we accept a line like this, then we will be able to give an analysis of the truth conditions for claims about inherence in terms of quantification, the truth-conditions for the holding of the **R** relation, and truth conditions for the application of the '□' operator to an arbitrary proposition. For example, (C1*) would be true if and only it every possible world in which *color* exists is world in which it bears **R** to some particular body. On the other hand, (C5) would be true only if there were a particular body such that in every possible world in which *color* exists it bears **R** to that very body. It would be open to Aristotle to accept (C1*) and to deny (C5). On the other hand, a sentence like (C4) will demand a *de re* reading.

(C4) This pallor is in Socrates.

(C4) is to be understood as:

(C4*) □(This pallor bears **R** to Socrates.)[20]

(C4*) is true iff in every world in which this pallor exists is a world in which it bears **R** to Socrates.

It is important to note that, on the proposed analysis, inherence turns out not to be a *fundamental* relation. Rather inherence is analyzable in terms of necessity and the **R** relation, which is best construed as some kind of predication relation. However, I do not think that this interpretation accurately captures the order of analysis intended by Aristotle. On my view, Aristotle takes predication to by analyzable in terms of inherence and the said-of relation. He does not attempt to give an analysis of inherence and the said-of relation in terms of a single basic predication relation and some kind of

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[20] The existential generalization of (C4) will be 'This pallor is in some person', which can be read specifically as '∃x(x is a person & **$(R**ps)).

modal operator.[21] However, if Aristotle is attempting to analyze predication in terms of inherence rather than *vice versa*, then inherence seems to be more fundamental than any possible candidate for the **R**-relation in the above analysis. Furthermore, even if we were to come up with some way of justifying a non-specific reading of (C1), we would still have to face the fact that, at 2b4-5, Aristotle claims that everything is either said-of or is in primary substance.[22] It is hard to see how we could find a reading of 'is in' that will eliminate the seeming implication that universal nonsubstance is here said to inhere in primary substance. In short, I do not think that the attempt to find a nonspecific reading of (C1) has much hope of succeeding

I turn now to the second way in which we might try to give an account of (C1) so that it admits of a non-specific reading. On this view, (C1) does assert that the inherence relation holds between *color* and an entity, but that entity is not an individual body. For the sake of comparison, think about (D2). We have already noted that (D2) cannot be taken to assert the holding of the *seeking* relation between Diogenes and a particular honest man. But perhaps it still asserts the holding of the *seeking* relation between Diogenes and something else. Perhaps the sentence asserts that the seeking relation holds between Diogenes and the complex property of honest humanity, and Diogenes will be successful in finding the property if and only if he

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[21]   An extensive treatment of Aristotle's views about modality is beyond my current project. However, I agree with Patterson, *Aristotle's Modal Logic* (1995), that Aristotle formally takes necessity to act as a copula operator rather than as a predicate or proposition operator. In other words, when Aristotle claims that necessarily x is y, he means neither that the proposition that x is y is necessary, nor that x has the property of being necessarily-y. Rather, he means that x is-necessarily y, by which he means to indicate that the copula-joining x to y is of a different sort than the copula-joining x to y in a contingent case. I think that Aristotle wants to explain necessity in terms of the nature of the relations that join actual entities. Furthermore, I think that the inherence and said-of relations will play a role in explaining the nature of the necessary copula. On my interpretation of Aristotle, it is *because* of the fact that *color* inheres in *body* that we can't have colored things that are not bodies.

[22]   ὥστε τὰ ἄλλα πάντα ἤτοι καθ' ὑποκειμένων τῶν πρώτων οὐσιῶν λέγεται ἢ ἐν ὑποκειμέναις αὐταῖς ἐστίν. "So that all the other things are said of primary substances as subjects or are in these subjects. (2b4-5) It is hard to see how we can deny that this passage implies that everything that is not said-of a primary substance inheres in primary substances.

finds an instantiation of it.[23] In a similar way we might allow that '*tini sômati*' in (C1) does function to signify an object to which *color* bears the inherence relation, but this object is not any particular body.

What would the object signified by '*tini sômati*' have to be like in order to serve as the proper sort of relatum for the inherence relation? It would have to be something that *color* was in (in some colloquial sense), which *color* was not a part of, and which is such that *color* could not exist and fail to be in it. Imagine an object that is not identical to any particular body, and which exists in any possible situation where any particular body exists. Let's call this object 'indefinite body' or 'body$_{ind}$'. Further, let's say that body$_{ind}$ maintains its identity through changes in which particular bodies exist. Assume for the sake of argument that *color* can be said to be in body$_{ind}$ in a colloquial sense of 'in'. We can now claim that '*tini sômati*' in (C1) functions as a singular term signifying body$_{ind}$. On this interpretation, (C1) isn't a quantified sentence at all, but is a sentence asserting the holding of the inherence relation between a universal and an indefinite object. Furthermore, on this interpretation (C1) says something true.[24] *Color* is in body$_{ind}$ in the non-technical sense, *color* is not a part of body$_{ind}$, and there is no possible situation in which *color* exists and fails to be in body$_{ind}$.

On the condition that Aristotle would accept indefinite entities like body$_{ind}$, the interpretation under discussion would render 2a34ff compatible with the claim that

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[23] Two points should be made here. First, I am not endorsing this analysis of 'seeks'-sentences. But something like it would be needed if we insisted on taking (D2) to assert that the *seeking* relation holds between Diogenes and some entity. Compare the attempt to give a propositional analysis of intensional transitives—where we say that (D2) asserts a relation (maybe the *trying-to-make-true* relation between Diogenes and the proposition that Diogenes finds an honest man. Or take Montague's suggested analysis on which we take (D2) to assert the holding of a relation between Diogenes and the property of being a property of some honest man. Second, if we are going to go through with this sort of analysis, we should allow that the properties in question exist even in worlds where nothing instantiates them. This way, Diogenes can seek things that do not exist, like unicorns (or, in his view, honest men).

[24] Remember that '*tini sômati*' on this interpretation functions as a singular term. Furthermore, it designates rigidly—it designates the very same indefinite object, body$_{ind}$, in every world where it designates anything.

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inherence entails ontological dependence. I think that Aristotle does accept entities that have the existence conditions of body$_{ind}$. As I discuss in chapter 7, I think that Aristotelian universals have the same existence and identity conditions as these indefinite objects. However, I do not think that we can take '*tini sômati*' at 2b1 to be a singular term that designates the universal body.

There are a few textual for my uneasiness. First of all, I think that it is a stretch to think that *'tini'* can ever have the sort of grammatical function that it would need to have for the current analysis to work. I can think of no other context in which adding an indefinite adjective to a noun would yield a referential expression. It would be akin to adding 'a/an' or 'some' to an English noun, and having the resulting complex act as a singular term. Second, in the next sentence Aristotle writes, "For if it is not in some of the particulars, neither is it in body at all."[25] This sentence is most naturally taken to draw a contrast between *color's* being in some particular body and *color's* being in the universal body. Aristotle's use of '*mê en tini tôn kath' hekasta*' suggests that we are considering a case where *color* is not in at least one of a plurality of particulars, since '*tôn kath' hekasta*' is plural. It would be a serious stretch to take this as an expression denoting a single indefinite entity. Furthermore, Aristotle's argument would look bizarre. He would be saying that if *color* was not in body$_{ind}$ then *color* would not be in *body*. But it is hard to see what being in body$_{ind}$ could amount to other than being in the universal *body*. Finally, there is the fact that Aristotle seems to take what he is saying about inherence to be parallel to what he has just said about said-of relation. But in the argument that *animal* is said-of *man* only if it is said-of some particular man, Aristotle writes, "If it is said-of none of the particular men, neither is it said-of man at all."[26] Again it seems to be the case that Aristotle is drawing a contrast between

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[25]   εἰ γὰρ μὴ ἐν τινὶ τῶν καθ' ἕκαστα, οὐδὲ ἐν σώματι ὅλως.
[26]   εἰ γὰρ κατὰ μηδενὸς τῶν τινῶν ἀνθρώπων, οὐδὲ κατὰ ἀνθρώπου ὅλως.

being said-of one or more particulars and being said-of a universal. It seems that Aristotle takes 'If it is not said-of some of the particular [bodies]...' ('*ei gar mê en tini tôn kath' hekasta...*') to be parallel to 'If it is said of none of the men...' ('*ei gar kata mêdenos tôn tinôn anthrôpôn...*'). Compare 'If *x* bears R to none of the *ys*,' to 'If *x* does not bear R to some of the *ys*'. However, '*tôn tinôn anthrôpôn*' is a plural expression, and could not plausibly be taken to refer to a single indefinite object. It seems unlikely, therefore, that Aristotle intends "Color is *en tini sômati*" to say that *color* inheres in a single indefinite object.

In short, I think that there are a two ways to analyze (C1) so that it admits of a non-specific reading. We can take 'is in' as shorthand for a pair consisting of a modal operator and a relation other than the *inherence*. Alternatively we could try to take the phrase '*tini sômati*' as a singular term that refers to something other than a particular body. Furthermore, I think each of these analyses might be further developed in philosophically plausible ways. Nevertheless, I do not think that either of these analyses can be made to fit a system on which Aristotle takes inherence to be a fundamental relation holding between categorial entities. I turn now to two attempts to reconcile Aristotle's conflicting claims about inherence by holding that he uses 'is in' ambiguously.

Section 6.3: Wedin's Proposed Disjunctive Definition of Inherence

In his book *Aristotle's Theory of Substance* (2000), Michael Wedin attempts to sort out Aristotle's seemingly conflicting claims about the inherence relation.[27] Wedin hopes to extricate Aristotle from difficulties by offering a disjunctive reading of the definition of inherence. Strictly speaking, Wedin does not want to claim that there are multiple senses of 'in', as does Duerlinger whose view we will examine later in this

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[27]   Chapter II in Wedin's book, in which these issues are discussed, is a reworking of his 1993 paper "Nonsubstantial Individuals".

section. Rather, on Wedin's view, Aristotle accepts a single definition of inherence according to which there is one set of conditions for the inherence of a nonsubstantial particular in something, and a different set of conditions for the inherence of a nonsubstantial universal in something.

There are several formal difficulties with Wedin's development of his interpretation, which I discuss in some detail below. After discussing these problems, I offer a version of Wedin's interpretation that avoids these formal difficulties. I then turn to the question of whether we can offer the revised version as an interpretation of what Aristotle actually says at 1a24-25, and argue that, like Wedin's original formulations of a definition of inherence, the revised definition is far too syntactically complicated to serve as an accurate rendering of what Aristotle says in the *Categories*. We might, nevertheless, think that Wedin's suggestion is useful as an account of how Aristotle *should have* defined the inherence relation. I end this section with a discussion of the merits of Wedin's account as a revisionist account of Aristotle's thoughts about inherence.

Wedin begins his discussion of Aristotle's account of inherence by laying out the interpretations of 1a24-25 given by Ackrill and Owen. Wedin offers number of powerful criticisms of Owen's reading of the passage, and points out that on Ackrill's interpretation Aristotle must be taken to contradict himself when he claims that a nonsubstantial universal can inhere in an individual substance. Wedin then turns to Frede's interpretation of 1a24-25 from which he begins to develop his own account. Beginning with Frede's interpretation, Wedin successively criticizes and revises a number of formulations of the definition of inherence at 1a24-25, before finally arriving at a formulation that he endorses and calls "The New Revised Standard Version" (NRSV) of Aristotle's definition of inherence. The New Revised Standard Version is supposed to avoid the problems of all of its major competitors. On the one

hand, the NRSV is supposed to entail that particular nonsubstances are ontologically dependent on the particular substances in which they inhere. On the other hand, the NRSV is supposed to allow that universal nonsubstances can inhere in particular substances without being ontologically dependent on these particular substances. If Wedin's interpretation works, then it seems to give us everything that we are looking for. It will be useful, therefore, to look at this interpretation in some detail.

As I mention above, Wedin begins the development of the NRSV by examining and criticizing Frede's interpretation of 1a24-25. We begin with Frede's presentation of his own view.

> (F) x is in something as its subject, if there is a subject y such that
> (a) x is not a part of y &
> (b) x cannot exist independently of y.

Wedin notes both that (F) isn't properly speaking a definition since it gives only sufficient conditions, and that Frede needs to say something to ensure that y will not only be *a subject*, but will be a *subject for x*.[28] Accordingly, Wedin presents the following as an improvement on F, which he claims is a slightly modified formalization of Frede's view:

> (F**) x is in something, z, as its subject $\equiv$ there is a subject y such that
> (a) x is in y &
> (b) x is not a part of y &
> (c) x cannot exist independently of y.[29]

As it stands, F** is ambiguous. (F**) contains three variables. It is clear that we are to understand 'x' to be bound by a universal quantifier, and that we are to understand 'y' as bound by an existential quantifier that falls within the scope of the '$\equiv$'. However, it

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[28]   As I note in my discussion of Frede above, Frede's condition will be satisfied by any object provided we can find some subject such that the object could not exist without that subject. However, it will then follow that any substance which could not exist without a second substance will count as inhering in something. Wedin criticizes Frede on similar grounds. We can avoid this problem by allowing that Aristotle does have a nontechnical sense of 'in' in play at 1a24-25, and that an item is in something in the nontechnical sense only if the second is a subject for the first.

[29]   See Wedin 2000 p53.

isn't completely obvious what sort of quantifier Wedin takes to bind '*z*' or what scope that quantifier is supposed to have with respect to '≡'.

What sort of quantifier is supposed to bind '*z*'? It seems to be natural to take the English phrase, '*x* is in something, *z*, as its subject' as existentially quantifying over *z*.[30] Furthermore, this seems the only way to construe (F**) so that it will serve as an accurate representation of Frede's view. Remember that, according to Frede, Aristotle wants to give conditions under which a thing has the relational property of *being in something*, rather than to give conditions under which any two arbitrarily specified objects stand in the relation of inherence.

(F**) will give something equivalent to what Frede wants, if and only if we take '*z*' to be bound by an existential quantifier which has a narrower scope than the biconditional '≡'.[31] Taken this way, we will end up with the following:

(F**$_{\exists nar}$) $\forall$x[$\underline{\exists}$z(*x* is in *z* as its subject) ≡ $\exists$*y*(*y* is a subject &
      (a) *x* is in y &
      (b) *x* is not a part of *y* &
      (c) *x* cannot exist independently of *y*)].[32]

Despite the fact that there are good grounds for taking (F**$_{\exists nar}$) as the best way to understand (F**), I am not entirely certain that this is what Wedin intends. Wedin later tells us that he wants to give a definition of the relation of inherence rather than

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[30]   I'm not quite sure that natural language intuitions are much help in the present context. It isn't clear to me that it is natural to take '*x* is in something, *z*, as its subject' as involving quantification at all. Rather, it seems most natural to take '*x*' and '*z*' as something like names. Nevertheless, it is obvious that Wedin wants to take '*x*' as bound by a universal quantifier. Furthermore, in a different context, Wedin indicates that he understands '*x* is in something, *z*, as its subject ≡ …' to mean '$\forall$x$\exists$z[x is in z as its subject ≡ …]'. See Wedin (2000) pg. 49 note 20.

[31]   Take the following as a formal version of F** understood to have '*z*' bound by an existential quantifier: (i) $\forall$x($\exists$z**I**xz ≡ $\exists$y**R**xy). '**I**xy' is the *relation* 'x inheres in y', and '**R**' is a complex relation that holds between two objects iff those objects satisfy the RHS of F**. (i) is equivalent to (ii) $\forall$x (λu[$\exists$v(**I**uv)]x ≡ $\exists$y(**R**xy)). 'λu[$\exists$v(**I**uv)]x' is an example of lambda-abstraction and can be read as saying 'x has the property of being a thing such that there is something in which it inheres.' (ii) is, therefore, a good way to render what Frede claims to be after. And (i) which is (F**$_{\exists nar}$) is equivalent to (ii).

[32]   I assume that this is more plausible than a version of the condition where the quantifier has wide scope with respect to the biconditional. The resulting proposition, call it F**$_{\exists wide}$ is strictly weaker than F**$_{\exists nar}$, and doesn't seem to be what Aristotle is looking for.

of the relational property of being an inherer by providing a suitable way of filling in the blank in "x is in something, z, as its subject ≡ _____."[33] We would expect the definition of a relation to give us conditions under which any two objects stand in that relation. However, we will have such a definition only if both 'x' and 'z' are bound by universal quantifiers. Since $(F^{**}_{\exists aar})$ does not specify such conditions, it is not even of the right form to serve as the definition of the relation of inherence.

However, were we to try to construe (F^{**}) as providing a definition of the relation of inherence, we would end up with something bizarre. We would have something like:

$(F^{**}_{\forall wide})$ $\forall x \forall z$ [x is in z as its subject ≡ $\exists y$ (y is a subject &
            (a) x is in$_{nt}$ y &
            (b) x is not a part of y &
            (c) x cannot exist independently of y)].[34]

There are two major problems with $(F^{**}_{\forall wide})$ as a definition of the relation of *inherence*. First of all, if we are trying to define the conditions under which x inheres in z, we expect the conditions to crucially involve x and z. In $(F^{**}_{\forall wide})$, however, 'z' occurs only on the left-hand side of the definition. The second problem concerns the results that we get from accepting $(F^{**}_{\forall wide})$, which tells us that if there is any object that x is in$_{nt}$, isn't a part of, and cannot exist independently of, then x inheres in every object in the universe. Presumably nobody intends to say that. $(F^{**}_{\forall wide})$ seems to be a disastrous way to take (F^{**}). In short, therefore, $(F^{**}_{\exists nar})$ seems to be the most

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[33]   There are several places where Wedin suggests that we take F** as a definition of the relation rather than of the relational property. Especially see Wedin (2000) pp48-49, and p65-66.

[34]   I assume that this is more plausible than an alternative on which the '$\forall z$' has narrower scope than the biconditional; call the latter $F^{**}_{\forall nar}$. $F^{**}_{\forall wide}$ specifies conditions under which for two arbitrarily specified objects, the first inheres in the second. The weaker $F^{**}_{\forall nar}$ specifies conditions under which an arbitrarily specified object inheres in every object. Let 'Rab' abbreviate b is a subject and <a,b> satisfies conditions (a)-(c) on the RHS of F**. $(F^{**}_{\forall nar})$ could be true in a model where I can specify an object that inheres in some things but which bears R to nothing at all, provided there is at least one thing in which that object does not inhere. This fact makes $F^{**}_{\forall nar}$ a poor candidate for defining anything in terms of R. Here is a simple model that makes $(F^{**}_{\forall nar})$ true, but $(F^{**}_{\forall wide})$ false: D={a,b} ext('I')={a,b} ext('R')={}.

plausible way to take (F**), but does not have the right form to be a definition of the relation of inherence.[35]

(F**$_{\exists nar}$) does not entail that an object is ontologically dependent on every thing in which it inheres, and accordingly does not entail that whatever inheres in a particular substance is ontologically dependent on that substance. Wedin tells us that by adding a clause to (F**), we end up with an interpretation of 1a24-25, which requires that nonsubstantial particulars be ontologically dependent on particular substances, and which does not rule out the possibility that universal non-substances can inhere in particular substances. Wedin says tells us that we can obtain the "Revised Standard View" by conjoining the following condition to F**:

(F+) $y=z \supset$ (d) x is an individual $\equiv y$ is an individual $\vee$
                          (e) x is general $\equiv y$ is general.[36]

Strictly speaking, we can't simply conjoin the open formula (F+) to (F**) and end up with a sentence at all. Presumably, therefore, Wedin intends all the variables in (F+) to end up being bound by the quantifiers in (F**). As a first pass we get the following:

(F**+): x is in something, z, as its subject $\equiv$ there is a subject y such that
                          (a-c) Rxy[37] &
                          (d,e) (y=z $\supset$ (x is individual $\equiv$ y is individual) $\vee$
                                                   (x is general $\equiv$ y is general))

Notice, however, that (F**+) is not a conjunction of (F**) and (F+); (F**+) is not a conjunction containing (F**) or (F+). Moreover and more importantly, (F**+) and (F**) differ in that the former contains an occurrence of 'z' on the right-hand side of the initial '$\equiv$'. This occurrence of 'z', however, makes it impossible for the quantifier binding 'z' to have a narrower scope than the biconditional '$\equiv$'. Therefore,

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[35]   Notice on the other hand that we can alter (F**$_{\forall wide}$) by replacing all occurrences of 'y' with 'z', and removing the existential quantifier binding 'y'. We then get:
$\forall x \forall z$ [x is in z as its subject $\equiv$ (a) x is in z & (b) x is not a part of z & (c) x cannot exist independently of z)]. This condition does have the logical form of a definition of the relation of inherence, and is in fact, Ackrill's (1963) reading of 1a24-25.
[36]   See Wedin (2000) pg. 53.
[37]   Where 'Rxy' abbreviates '(x is in y & x is not a part of y & x cannot exist independently of y)'

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"conjoining" (F+) to (F**) changes the scope of the quantifier binding 'z', if that quantifier has narrow scope in (F**). Therefore, while the most plausible construal of (F**), (F**$_{\exists nar}$), had the quantifier binding 'z' take narrow scope with respect to the '≡', in (F**+) the quantifier binding 'z' *must* have wider scope than the '≡'. Fully spelled out, and assuming that (F**$_{\exists nar}$) was the correct reading of (F**), Wedin's (F**+) seems to be the following:

(F**+$_\exists$) $\forall$x$\exists$z [x is in z as its subject ≡ $\exists$y(y is a subject &
        (a) x is in y &
        (b) x is not a part of y &
        (c) x cannot exist independently of y &
        (d,e) (y=z $\supset$ ((x is individual ≡ y is individual) ∨
               (x is general ≡ y is general)))].

(F**+$_\exists$) seems to be an analysis neither of the relational property *being in something* nor of the relation __ *is in* __. In fact, (F**+$_\exists$) doesn't seem to be a definition or analysis of anything at all. Rather (F**+$_\exists$) tells us that for every object in the universe, we will be able to find at least one object such that *either* the first is in the second and a certain complicated condition holds, *or* the first is not in the second that complicated condition does not hold. [38]

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[38]   To put matters a bit more precisely, assume here that 'general' and 'individual' are mutually exclusive and jointly exhaustive predicates, and let 'Rxy' abbreviate '(x is in y &x is not a part of y & x cannot exist without y)'. Then (F**+$_\exists$) will be true just in case for every object in the universe x, there is at least one object z such that:

Either   (i)   **[**x is not in z as a subject &
               For every object in the universe, y, [¬Rxy ∨ **(**y=z & (x is individual ≡ y is general))**]]**
Or   (ii)   **[**x is in z as a subject and
               There is at least one object, y, such that [Rxy & (y≠z ∨ (x is individual ≡ y is individual))**]]**.

For what it is worth, (F**+) seems to be true. For every substance, we can specify something that it does not inhere in, and that substance won't bear R to anything in the universe (remember that 'Rxy' just claims that x stands in the relation to y that any things stance in which satisfy Ackrill's definition of inherence). Furthermore, assume that x is a non-substance. Let x be a non-substantial individual. It follows that there is some individual substance that that x inheres in, say z. Now let y=z, since x and y are both individuals the second condition is satisfied. Similar reasoning will hold for a case where x is a universal non-substance, and it inheres in a universal substance. However, while (F**+) is true, it doesn't seem to be a definition of anything. Furthermore, it is compatible with the claim that substances do inhere in things. It demands only that for each substance we can specify something that the substance fails to inhere in, and that the substance not bear R to anything. However, there is nothing in (F**+) to guarantee that whenever x inheres in y, x also bears R to y.

Understood in this way, (F**+∃) fails to split the world into the class of things that do inhere in something, and the class of things that do not inhere in anything. (F**+∃) thus crucially differs from (F**∃nar), which does so divide the world. While (F**∃nar) can be taken as a definition of the indefinite relational property of being a thing that inheres in something, (F**+∃) cannot be so taken.

Furthermore, (F**+∃) is clearly inadequate as an explication of what Aristotle says at 1a24-25, because it does not even rule out the possibility that primary substances inhere in something. Aristotle seems to take whatever he says at 1a24-25 and the fact that substances and differentia are not in anything in the non-technical sense to entail that substances and differentia do not inhere in anything. However, if we interpret 1a24-25 as (F**+∃), this entailment will not hold. Socrates is not in anything in the non-technical sense. Therefore, provided we can find a single entity that Socrates fails to inhere in, the substitution instance of (F**+∃) with 'Socrates' for 'x' will be true. And it will be true whether or not Socrates inheres in every other object in the universe. I take this to be a truly disastrous result for the suggestion that (F**+∃) is an explication of what Aristotle means at 1a24-25.

It is clear that (F**+∃) cannot be taken as a definition of the relational property *inhering in something*. Is there any way to take (F**+) as a definition of the relation of inherence? In order to be a definition of the relation, (F**+) would have to give conditions under which arbitrarily chosen entities will stand in that relation. We would then expect the occurrences of '*z*' in (F**+) to be bound by a universal quantifier. Therefore, if (F**+) is to supposed to give us a definition of the relation of inherence, then (F**+∃) cannot be the correct way to take it.

However, if we try to construe (F**+) as having a universal quantifier binding z, then matters get worse. We get:

(F**+$_\forall$) $\forall$x$\forall$z [x is in z as its subject ≡ there is a subject y such that
(a-c) Rxy &
(d,e) y=z ⊃   ((x is individual ≡ y is individual) ∨
(x is general ≡ y is general))].

(F**+$_\forall$) seems to have a consequence that Aristotle would take to be absurd. Say that

a is in$_{nt}$ b, a isn't a part of b, and a can't exist separately from b. Let c be any entity

where c≠b. It follows that a inheres in c as its subject. This result seems to be fatal for

(F**+$_\forall$). But (F**+$_\exists$) and (F**+$_\forall$) seem to be the only ways to take (F**+). Therefore,

I can find no possible way of taking (F**+) on which it is a plausible elucidation of

anything that Aristotle says about inherence.

I turn now to Wedin's final definition of inherence, "The New Revised

Standard Version" or (F++).[39]

(F++): x is in something z as its subject ≡ there is a subject y such that
(a) x is in y &
(b) x is not a part of y &
(c) x cannot exist independently of something u &
(d) y=u ≡ x is non-recurrent & z is particular.

For reasons similar to those I brought forward in my discussion of (F**+), the fact that

'z' occurs on the RHS of the first '≡' in this definition means that the quantifier

binding 'z' to have wide scope with respect to the first '≡'. We still have to figure out

what sort of quantifier Wedin takes to bind 'z'. I assume that 'u' is bound by an

existential quantifier the scope of which is indicated below. First, say that we take 'z'

to be bound with a universal quantifier.

(F++$_\forall$) $\forall$x $\forall$z (x is in something z as its subject ≡ $\exists$y [y is a subject &
(a) x is in y &
(b) x is not a part of y &
(c) $\exists$u (x cannot exist independently of u &
(d) y=u ≡ x is non-recurrent & z is particular)]).

[39]   See Wedin (2000) p65. It should be noted here that the principle that bears the name '(F++)' in
Wedin (1993) suffers from the same confusions that I talk about below.

($F++_\forall$) suffers from the same defects as those pointed out for ($F**_{\forall wide}$) and ($F**+_\forall$). If there is any suitable value for 'y' for which we can find a suitable value for 'u' (pick any thing other than y that x depends on), then x will inhere in every object in the universe. So the universally quantified version of (F++) won't do. What about the existentially quantified version?

> ($F++_\exists$) $\forall x \exists z$ (x is in something z as its subject $\equiv \exists y$ [y is a subject &
> (a) x is in y &
> (b) x is not a part of y &
> (c) $\exists u$ (x cannot exist independently of u &
> (d) $y=u \equiv x$ is non-recurrent & z is particular)]).

Like ($F**+_\exists$), this proposition defines neither a relation nor a relational property. Rather ($F++_\exists$) tells us that for every object in the universe we can specify at least one object such that one of two very complicated conditions holds.[40] It is difficult to see how ($F++_\exists$) helps us understand either the relation of inherence or the relational property of being an inherer.

Furthermore, like ($F**+_\exists$) above, ($F++_\exists$) has a very unwelcome consequence in the case of substances. For all ($F++_\exists$) tells us, primary substances do inhere in all kinds of objects. On the assumption that no primary substance is in anything in the non-technical sense, ($F++_\exists$) will be true taking Socrates as a value for 'x' provided we can find a single object such that Socrates fails to inhere in it. Specifically, ($F++_\exists$) will

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[40]   For every object in the universe a you can find at least one object b such that:
   either (C++1) a does not inhere in b & for every object, c
         a is not in c or
         a is a part of c or
         for every object d (either a can exist independently of d
                     or $c=d$ & either a is recurrent or b is universal
                     or $c \neq d$ & a is non-recurrent and b is particular).
   or   (C++2) a does inhere in b & there is an object, c, such that
         a is in c &
         a is not a part of c &
         for some object d (a cannot exist independently of d &
                     either ($c=d$ & a is non-recurrent & b is particular)
                     or ($c \neq d$ & (a is recurrent or b is universal))).

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be true even if Socrates inheres in every other object in the universe. $(F++_\exists)$ doesn't entail that Socrates inheres in anything, but it does not rule this possibility out either. I take it to be a minimal condition on any acceptable interpretation of Aristotle's claims about inherence at 1a24-25 that the interpretation plus the claim that Socrates is not in anything in the non-technical sense entails that Socrates does not inhere in anything. $(F++_\exists)$ is, therefore, a non-starter as an attempt either to define inherence or to define even the conditions under which something is an inherer.

   None of Wedin's proposed principles do what he wants them to do. Furthermore, the fact that his exposition of his position makes frequent reference to these flawed principles makes it somewhat difficult to see exactly what position he wants to endorse. I think that Wedin wants to lay out a revisionary definition of inherence, which will require that non-substantial particulars are non-recurrent and that non-substantial universals can inhere in particulars. I propose the following:

$$(W1): \quad \forall x \forall z \ [x \text{ is in } z \equiv \ x \text{ is in}_{nt} z \ \&$$
$$x \text{ is not part of } z \ \&$$
$$\exists y((y=z \vee y \text{ is said-of } z) \ \& \ x \text{ can't exist}$$
$$\text{without } y)^{41} \ \&$$
$$(\neg \exists w(x \text{ is said-of } w) \supset x \text{ can't exist without } z).]$$

(W1) seems to satisfy the *desiderata* that Wedin sets out. It is a definition of a relation, rather than of a relational property. It shows that entities which are in something, but which aren't said of anything are dependent on each thing that they are in—most importantly that they depend on the particulars in which they inhere. However, (W1) also allows for non-substantial universals—entities which are both in something and are said-of something—to inhere in a particular without being existentially dependent

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[41]   The first disjunct in the first conjunct is included to deal with highest substance universals. Since nothing is said-of these whatever inheres in them will have to be existentially dependent on them.

on that particular. Such entities need only be dependent on something said-of that particular. Finally, it seems to be something that Aristotle could accept.[42]

(W1) might very well be something that Aristotle should have accepted as a definition of inherence, and is a relatively straightforward characterization of a relation. In these respects, (W1) is superior to any of the characterizations of inherence that Wedin puts forward. Nevertheless, (W1) is not a good rendering of what Aristotle *does* say at 1a24-25. I can see no way of construing the text at 1a24-25 in a way that is as syntactically complex as (W1), (F**+), or (F++). (W1) seems to be a non-starter as an interpretation of the actual text of the *Categories.* Perhaps Aristotle should have given something like (W1) as a definition. However, we need to know not only what Aristotle *should have* said but also what he *does* say. Ackrill's way of construing Aristotle's statements at 1a24-25 is the most natural *prima facie* reading of the passage, and I have argued that none of its competitors is plausible as a replacement. I turn now to a second sort of ambiguity solution, suggested by James Duerlinger.

Section 6.4: Duerlinger's Ambiguity Interpretation

James Duerlinger (1970) offers a different sort of ambiguity solution than Wedin.[43] Duerlinger takes Ackrill's characterization of 1a24-25 to be largely correct, but claims that the 'in' defined at 1a24-25 is not the same 'in' that we find in the statement 'Color is in an individual body.' Rather the definition of inherence gives us a primary sense of 'in', and the uses of 'in' at 2b1-2 are derivative ones. Duerlinger takes the primary sense of 'in' to be definable as follows:

(D1) In-1: $\forall x \forall y$ (x is in-1 y iff ($\forall z$(x is not said-of z & y is not said-of z) & (x is not a part of y) & Necessarily(x exists $\supset$ y exists)).

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[42]   Notice that (W1) is strictly weaker than the Ackrillian reading of the passage, and is stronger than either Owen's or Frede's definition. If we get rid of the last conjunct, then (W1) seems to be something that Owen and Frede could both accept.

[43]   James Duerlinger "Predication and Inherence in Aristotle's *Categories*" (1970).

The derivative inherence relations will be defined in terms of In-1, the said-of relation and quantification:

(D2) In-2: $\forall x \forall y$ (x is in-2 y iff ($\exists z$ (x is said of z) & (z is in-1 y))).

(D3) In-3: $\forall x \forall y$ (x is in-3 y iff ($\exists z$ (y is said of z) & (x is in-1 z))).

(D4) In-4 $\forall x \forall y$ (x is in-4 y iff ($\exists w \exists z$ (x is said of w) & (y is said of z) & (w is in-1 z)).

We can now reinterpret Aristotle's statements at 2b1-3. Aristotle writes "Again, color is in body, and therefore in an individual body; for were it not in some individual body it would not be in body at all." We should take Aristotle to mean the following according to this line of interpretation: color is in-4 body, and therefore it is in-2 an individual body. Thus construed, 2b1-3 follows from the definitions D1-D4. For *color* to be in *body*, requires that there is an NSP-color that is in-1 a particular body. But then the universal *color* is in-2 that body.

On Duerlinger's interpretation, there is no reason to think that Aristotle says anything inconsistent with his definition of inherence when he claims that *color* is in an individual body. For *color* to be in-2 a particular body does not require that *color* be ontologically dependent on that body.

Furthermore, Duerlinger's interpretation offers us an elegant way of characterizing the truth of instances of linguistic predication. ⌜α⌝ is truly linguistically predicated of ⌜β⌝ iff either the entity indicated by ⌜α⌝ is in the entity indicated by ⌜β⌝ (in one of the senses of the senses of 'in' given in (D1)-(D4)), or the entity indicated by ⌜α⌝ is said-of the entity indicated by ⌜β⌝. Furthermore, we can see that adopting Duerlinger's strategy does not require us to add any additional fundamental relations beyond the primary inherence relation (In-1) and the said-of relation to Aristotle's ontology. Facts concerning the holding of all inherence relations will be logically entailed by the facts concerning the holding of in-1 relations between particulars, and

on the facts concerning the holding of the said-of relation. Furthermore, each of the derivative inherence relations is defined in terms of in-1.

Nevertheless, Duerlinger's interpretation is not without problems. First of all, there is the fact that it forces us to hold that Aristotle means to signify four different relations by 'in' without ever signaling that he is talking about four different relations. Aristotle is generally pretty good about making such distinctions between different senses of terms, and we might be wary about attributing such ambiguity to him. To make matters worse, we have to hold that Aristotle uses a term with two different senses in the course of a single sentence. Perhaps we can say that Aristotle failed to realize that he was using 'in' ambiguously, and offer him (D1)-(D4) as the best way of salvaging his overall theory. I will explain below that I think something like this latter strategy is correct.

There are a couple of things that we should note about (D1). First of all, according to (D1) only particulars, entities which are not said-of anything, can stand in the in-1 relation to a subject. Second, Duerlinger holds that we can eliminate reference to the non-technical sense of 'in' as it occurs in the definition at 1a24-25. I disagree with Duerlinger on both counts. Aristotle says nothing at 1a24-25 to restrict our focus to particulars. Furthermore, it seems that there are plenty of cases in which universals meet the conditions laid down in Aristotle's definition. For example, the universal *color* seems to be ontologically dependent on the universal *body* in precisely the way required by the definition at 1a24-25. So, we cannot deny that nonsubstantial universals can inhere in substance universals in the primary sense of inherence. In addition, without some amendment, (D1) will require us to say that every substance is in-1 any entity that exists in every possible world where it does. This result is

unacceptable, and can be avoided by leaving the non-technical sense of 'in' in the definition.[44] If we make the two amendments that I suggest we get:

(D1*) In-1: $\forall x \forall y$ (x is in-1 y if and only if x is in$_{nt}$ y & x is not a part of y & Necessarily(x exists $\supset$ y exists)).[45]

However, (D1*) just is the rendering of 1a24-25 suggested by Ackrill. The result of replacing (D1) with (D1*), and keeping (D2)-(D4) unchanged will be an interpretation that takes Aristotle to define a primary sense of inherence which does require ontological dependence, but then to use the same term to indicate a relation that does not require ontological dependence later in the *Categories*. I find it implausible to think that Aristotle would shift the meaning of a term that is central to the theory he is outlining in the *Categories*, without signaling that he is doing so. It is more plausible to hold that Aristotle intends the same sense of 'in' in the two passages, and that he is wrong to say that *color* is in a particular body at 2a34.

Nevertheless, Duerlinger's interpretation is extremely valuable in that it suggests that Aristotle needs to tell a more complicated story about the conditions under which one thing will be a subject for another. Take a case where Socrates is pale. It is true that Socrates is a subject for an NSP-pallor. However, it is also true that Socrates is a subject for the universal *pallor*. Aristotle tells us that primary substances are subjects for everything else. In addition, he seems to think that the following condition on subjecthood obtains:

(Subj) *x* is a subject for *y* if and only if either *y* is said-of *x* or *y* is in *x*.[46]

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[44]   There are other ways to avoid this problem. We might qualify the sort of dependence expressed in the last conjunct of the definition. Some qualification of (D1) is needed, however, if we are to have even an extensionally adequate definition.
[45]   Notice that by accepting (D1*) in place of (D1) as the definition of In-1, we no longer have 'Color is in-4 body' entail 'Color is in-2 a particular body', since we have no guarantee that the entities that we can plug in for 'z' and 'w' will be particulars.
We need to accept a further general principle that whenever one universal inheres in another, there are particulars which the first is said-of which inhere in particulars which the second is said-of.
[46]   (Subj) obviously follows from Aristotle's claim that "...all the other things are either said of the primary substances as subjects or in them as subjects."(2b3-5), and the fact that he takes primary

But if primary substances are subjects for non-substantial universals and (Subj) is true, then Aristotle must think that nonsubstantial universals are in primary substances, since a non-substantial universal cannot be said-of a substance. Aristotle can be correct to hold (Subj) only if 'in' does not have the same sense in (Subj) that it has in 1a24-25. The only alternative to a view like Duerlinger's, then, is to hold that Aristotle is mistaken in subscribing to (Subj), and that more careful consideration of the nature of inherence would lead him to see not only that nonsubstantial universals cannot be in primary substances, but also that a more complicated story needs to be told about subjecthood. Furthermore, the story that Aristotle has to tell about subjecthood will be structurally similar to Duerlinger's suggestions about how to disambiguate 'in'. We replace (Subj) with (Subj*).

> (Subj*) x is a subject for y if and only if
>   (i) y inheres in x, or
>   (ii) y is said-of x, or
>   (iii) there is a z, such that y is said-of z, and z inheres in x, or
>   (iv) there is a z, such that y inheres in z, and x is said-of z, or
>   (v) there are w and z, such that y is said-of w, and x is said-of z,
>   and w inheres in z.

I think that Aristotle should have accepted (Subj*) in place of (Subj), if pushed on the issue. I also think that, if pressed, he would deny that nonsubstantial universals inhere in primary substances. Nevertheless, I think that he does endorse (Subj) in the *Categories* rather than (Subj*), and that he claims that non-substantial universals do inhere in primary substances in the single sense recognized at 1a24-25.[47] Like Ackrill, I take Aristotle to be mistaken in making these claims. However, I do not think that Aristotle is simply being careless. Rather, I think that he is led to make these errors by

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substances to be subjects for everything(2b37-3a1). I am suggesting that Aristotle takes his claim at 2b3-5 to follow from (Subj) and the claim that primary substances are subjects for everything. I will suggest that when push comes to shove, Aristotle would continue to hold that primary substances are subjects for everything, would abandon (Subj) in favor of (Subj*) below, and would take (2b3-5) to be false.

[47] While Duerlinger's interpretation is more charitable, I find it hard to accept that Aristotle intended to use 'in' ambiguously without ever signaling that he was doing so.

a confusion in the way that he understands the said-of relation between universals and particulars. I turn now to a discussion of the nature of Aristotelian universals in chapter 7, after which we will be in a better position to examine why Aristotle is led to these errors in the *Categories*. In chapter 8, I return to 2a34ff and attempt to figure out what might have led Aristotle to the mistaken assertion that *color* inheres in an individual body.

CHAPTER 7

ARISTOTLE ON UNIVERSALS

Section 7.1: Introduction

Aristotle accepts the existence of particulars both in the category of substance

and in each of the non-substantial categories. Whenever we predicate an accident of a

particular substance, Aristotle thinks that the truthmaker for such predication is the

inherence of a non-substantial particular (NSP) in a particular substance. For example,

"Socrates is pale" is true because an individual pallor, an NSP, inheres in Socrates.[1]

Many of the facts recognized by Aristotle contain only particular entities as

constituents, and he might have been able to construct a reasonable ontology that

included only particulars. However, he did not attempt to do so. In addition to

particulars, Aristotle countenances universals, and these universals play several

important roles in his philosophy. The species and genera of particular substances are

universals, and are said to be secondary substances. Universals both in the substantial

and non-substantial categories are the objects of Aristotelian science, and he takes the

long-term stability and comprehensibility of the world to be underwritten by relations

among universals.

Aristotle takes universals to be real mind-independent entities, and thus differs

from the nominalist or conceptualist about universals.[2] However, he also disagrees

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[1]   At *Categories* 1a27, Aristotle uses the phrase '*to ti leukon*' which I translate as 'the individual pallor'.

[2]   The best defense of a conceptualist position can be found in Lloyd *Form and Universal in Aristotle* (1981), which is discussed in Tweedale "Aristotle's Universals" (1987). The best defense of a (predicate) nominalist position can be found in Cresswell (1975), which is treated (and I think undermined) by Tweedale (1987). For the time being, I use "nominalist" narrowly, to refer to the sort of position that Armstrong (1978) and (1989) calls "predicate nominalism" or "concept nominalism". I will consider the positions that Armstrong terms "class nominalism" and "mereological nominalism" shortly. For nominalist or conceptualist interpretations of Aristotle see Jones "An Introduction to the First Five Chapters of Aristotle's Categories" (1975), Hartman *Substance, Body, and Soul: Aristotelian Investigations* (1977). For some discussion, see Irwin (1988) sections 41-42, 63, Barnes (1994) 144-145.

with the Platonist by holding that universals are not separate from particulars nor are they something beyond (*para*) the particulars.[3] In the words of his Latin commentators, Aristotle accepts *universalia in rebus* (universals in things) but rejects *universalia ante res* (universals before things).[4] But what exactly is it for Aristotle to hold that universals exist 'in' but not 'beyond' or 'before' things?

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[3] See *Posterior Analytics* I.24 (85b15-22). Gail Fine has maintained out that Aristotle sometimes does claim that universals are something *para* particulars; for example in the *Peri Ideôn*. However, I am not sure that Aristotle assents to the claim that anything *para* the particulars exists in that text. Rather, he seems to be rehearsing some arguments that the Ideas must exist *para* the particulars if we are to have sciences. However, in the *Posterior Analytics* I.24, Aristotle seems to want to establish that the sciences can be possible even if the universals are not something *para* particulars. I take the claim that universals are nothing *para* particulars to be equivalent to the claim that universals are not separated or separable (*chôriston*) from particulars. While the claim that Plato thought of universals as separable from particulars is controversial, Aristotle seems to have take Plato to take universals to be separable. Perhaps the clearest passage in which Aristotle makes this point is in *Metaphysics* H.4: "For two things may be fairly ascribed by Socrates—inductive arguments and universal definition, both of which are concerned with the starting point of science. But Socrates did not make the universals (τὰ καθόλου) or the definitions exist apart (χωριστὰ); his successors, however, gave them separate existence (χωρίζω), and this was the kind of thing they called Ideas." (1078b27-31 trans. Ross) It seems clear that Aristotle takes Plato to think that Forms or Ideas are *chôriston*, by which he means at a minimum that the Form is capable of existing without any particular instances. For more on separation and arguments about whether or not Plato took Forms to be separable, see Fine (1984). I discuss these issues in chapters 9 and 10.

[4] The source of much of the Medieval discussion of universals is Porphyry's *Isagoge*, and Boethius' two commentaries on the *Isagoge*. At the outset of the *Isagoge*, Porphyry raises three questions about universals such as species and genera only to ignore them, "For now concerning the genera and species—whether they subsist, whether they lie in bare thought alone, whether if they subsist they are corporeal or incorporeal, and whether they exist separately or are in sensible things and subsist in connection with these—I will decline to say anything, since these are deep matters requiring further investigation." (4,1.1.9-4,1.1.14) (αὐτίκα περὶ τῶν γενῶν τε καὶ εἰδῶν τὸ μὲν εἴτε ὑφέστηκεν εἴτε καὶ ἐν μόναις ψιλαῖς ἐπινοίαις κεῖται εἴτε καὶ ὑφεστηκότα σώματά ἐστιν ἢ ἀσώματα καὶ πότερον χωριστὰ ἢ ἐν τοῖς αἰσθητοῖς καὶ περὶ ταῦτα ὑφεστῶτα, παραιτήσομαι λέγειν βαθυτάτης οὔσης τῆς τοιαύτης πραγματείας καὶ ἄλλης μείζονος δεομένης ἐξετάσεως·) In his second commentary, Boethius identifies the Aristotelian position with one that takes species and genera to exist as incorporeal features of things that cannot exist independently of bodies. For more on Porphyry, see Barnes *Porphyry Introduction* (2003), and Spade *Five Texts on the Medieval Problem of Universals* (1994).   For more on Boethius, see Carre (1946) pp38-40, McInerny (1970), Spade (1994). From Boethius onwards, Porphyry's questions were of great interest to metaphysicians. Spade (1994) traces some alternative medieval views about universals. See also Gyula Klima's entry "The Medieval Problem of Universals" (2008) in the Stanford Encyclopedia of Philosophy. Klima cites two sources of the '*in rebus*', '*ante rem*' distinction. First, in his commentary of the sentences, Giles of Rome writes: "And perhaps this is whence the distinction originated that there are three kinds of universals: *before the thing, in the thing*, and *after the thing*. For a universal in the first way is before the thing, because it causes things. In the second way it is in the thing, because it is the same essence as the things. In the third way it is after the thing, because it is a species abstracted from the things and caused by them." (Giles of Rome, *In Primum Librum Sententiarum* 1SN, d. 19, pars. 2, q.1; cited by Klima (2008)). Second, in John Wyclif's *Tractatus De Universalibus*, ed. Mueller (1985), he distinguishes between three sorts of universals: those in things, thost before things, and those after things. See also Anthony

In this chapter, I offer an interpretation of Aristotle's views about the nature of universals, and about the nature of the relation between universals and particulars. I first argue that Aristotle takes universals to be wholes of which particulars are parts. After establishing that the relation between universal and particular—the said-of relation—is some sort of whole-part relation, I turn to the task of trying to further elucidate the nature of the relation. I hold that the said-of relation should be understood neither as a set-theoretic relation nor in terms of the part-whole relation discussed in classical mereology. The sense in which particulars are parts of universals must be different from the sense in which members or subsets are parts of sets, and from the way in which parts are parts of mereological fusions.

Aristotle denies that universals are identical to extensions of particulars. An extensional understanding of the said-of relation would make good sense out of Aristotle's claims that universals are nothing *para* particulars, and would allow us to claim that non-substantial universals are existentially dependent on (and can thus inhere in) substantial particulars. Nevertheless, the fact that Aristotle takes universals to endure through destruction of their particular parts implies that universals are not just extensions of those parts. Aristotle seems to think that one and the same universal can be composed out of different parts at different times, but he still wants to claim that universals are nothing *para* these particulars. I suggest that Aristotle takes the said-of relation to be something like the relation by which complex enduring material objects are constituted by material parts the destruction of which they can survive. I argue that this interpretation fits the relevant texts, satisfies Aristotle's desiderata, and ultimately gives real concrete universals that are neither reducible to nor beyond particulars.

Kenny's translation *John Wyclif: On Universals* (1985). It is clear that these later medieval thinkers are referring to a long tradition.

The sense in which a universal is nothing beyond the particulars it is said-of is weaker than the sense in which a mereological fusion is nothing beyond the parts in the fusion.[5] Nevertheless, I think that Aristotle has real sympathy toward the position that universals are extensions of particulars, and therefore nothing *para* those particulars in the stronger sense. I continue this discussion in the next chapter, and suggest that some of Aristotle's problematic statements about inherence in the *Categories* could result from a failure to be clear about the precise nature of the parthood relation holding between particulars and universals.

Section 7.2: Aristotelian Universals as Wholes

It is generally accepted that Aristotle recognizes universals at the very outset of the *Categories*. At 1a20ff, Aristotle introduces two relations that an entity may bear to a subject. An entity can inhere in a subject, or an entity can be said-of a subject.[6] Entities that inhere in a subject are accidents, while those, which do not inhere in any subject, are substances. Entities that are said-of a subject are universal, while those not said-of any subject are particular. Universals are said-of particulars, and are also said-of subordinate universals. For example, *animal* is said-of the universal *human*, and

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[5]   I spell this claim out more fully below. Roughly speaking, I think that we can separate four different claims. First, we might say that seeming singular quantification over universals can be replaced with plural quantification over particulars. This strikes me as an eliminativist position about universals. Second, we might hold that universals are sums that are identical to pluralities of particulars. On this view, commitment to sums involves nothing beyond commitment to the parts. However, this view seems to involve us in a problematic claim that one thing can be identical to many. Third, we might take universals to be sums of particulars, where the commitment to sums *is* a commitment to something other than the parts. We might nevertheless think that this commitment is particularly minimal, especially if we believe in mereological universalism. The sum is something, the existence of which is wholly determined by the existence of the parts, and the existence of which suffices for the existence of the parts. Fourth, we might think that a universal cannot be identified with any sum of particulars, but that various sums of particulars could suffice for the existence of the universal. However, it is essential to the universal that some sum of the relevant particulars exists. I think that Aristotelian universals should be thought of in the fourth way.

[6]   I use, '…is said-of a subject' to translate '*kath' hupokeimenou tinos legetai*', which is a bit of Aristotle's technical vocabulary. Aristotle sometimes uses '*kath' hupokeimenou*' and a form of the verb '*katêgorein*' to indicate the said-of relation. The roundabout use of an object plus '*kath' hupokeimenou*' indicates the use of the technical notion. The less prolix '*katêgorein*' + *epi* + object indicates the less technical notion 'is predicated of'. I use 'said-of' with the hyphen to indicate that the technical relation is indicated.

both *animal* and *human* are said-of Socrates. *Color* is said-of the universal *pale,* and both *color* and *pale* are said-of the individual pallor that inheres in Socrates.

Aristotle tells us a few more facts about said-of relation in the *Categories*. At 1b10ff, Aristotle tells us that the relation is transitive: "Whenever something is predicated of something else as a subject, everything said-of what is predicated will also be said-of the subject." Aristotle also thinks that, since each particular is located in a single *infimae species*, there is exactly one universal immediately said-of each individual. With universals the story is a bit more complex. Each universal, with the exception of the highest genera, is defined in terms of a genus and differentia. Both its immediate genus and immediate differentia will be immediately said-of a universal. In this chapter, I will largely ignore complications arising from Aristotle's treatment of differentia, and will generally assume that every entity (with the exception of the highest genera) has exactly one universal immediately said-of it.[7] The said-of relation is antisymmetric—no two non-identical objects are such that each is said-of the other.[8] Among the universals accepted by Aristotle are the species and genera of substances, which Aristotle calls secondary substances. He tells us that the secondary substances are the species and genera in which the substantial particulars (primary substances) belong.[9] The same relation that obtains between secondary and primary substances, viz., the said-of relation, also obtains between non-substantial universals and non-

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[7]   In the *Categories*, Aristotle holds that the differentia of an entity can be located in a different category than the entity itself. Since both the differentia and genus are said-of the species, this allows for the possibility that entities will constitute more than one distinct universal—for example *rationality* and *humanity* will turn out to be distinct entities which are constituted by all the same objects, but which end up in different categories. I argue in chapter 2 that Aristotle's treatment of differentiae in the *Categories* is ultimately untenable. Given Aristotle's views in the middle books of the *Metaphysics* on the unity of definition, I argue that we should hold that at each stage of division the very same universal entity corresponds to both the species-term and the differentia-term. The universal *rational* is identical to the universal *human*.

[8]   Whether we take the said-of relation to be asymmetric depends on whether we take it to be reflexive. For further discussion, see chapter 2. The decision here will matter in figuring out whether we should take the said-of relation to be more like the converse of parthood or the converse of proper parthood.

[9]   See *Categories* 2a11-19.

substantial particulars. Both non-substantial particulars and primary substances belong to their appropriate species and genera.

Although Aristotle accepts the existence of universals in the *Categories*, he does not there talk about them by name.[10] However, in chapter 7 of the *De Interpretatione* Aristotle writes:

> Among things, some are universal and others particular. I call universal that which is of a nature to be predicated of a plurality of things, and particular that which is not. For example, man is a universal, Callias a particular. [11] (17a38-b1)

A few points about this passage are in order. Aristotle locates both universals and particulars among the things (*pragmata*), indicating that universals are to be thought of as things rather than as linguistic or conceptual entities.[12] In a similar way, Aristotle locates the things said-of a subject among the beings (*onta*), rather than among the things that are said (*legomena*). When Aristotle goes on to claim that universals are naturally predicated of a number of things, we must keep in mind that Aristotle often uses the word '*katêgorein*' ('to predicate') to indicate a relation between entities.[13] *Human* is a universal because it is by nature metaphysically-predicated of a number of things. A sign that *human* is metaphysically-predicated of a number of things is the fact that its name, 'human', is by nature properly linguistically-predicated of a number of things. A sign that the particular Callias is not metaphysically-predicated of a number of things is the fact that the name 'Callias' is not predicated (univocally) of a number of objects.

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[10]   The one use of '*katholou*' in the *Categories* at 12a27 is non-technical and doesn't seem to have anything to do with universals.

[11]   "'Ἐπεὶ δέ ἐστι τὰ μὲν καθόλου τῶν πραγμάτων τὰ δὲ καθ' ἕκαστον, – λέγω δὲ καθόλου μὲν ὃ ἐπὶ πλειόνων πέφυκε κατηγορεῖσθαι, καθ' ἕκαστον δὲ ὃ μή, οἷον ἄνθρωπος μὲν τῶν καθόλου Καλλίας δὲ τῶν καθ' ἕκαστον…" (17a38-b1)

[12]   I do not mean to suggest that Aristotle always uses '*pragma*' to indicate things or states of affairs rather than linguistic or propositional entities, but I take him to be doing so in this passage.

[13]   In support of this claim, see e.g. Ackrill (1963), Owen (1965), Irwin (1988). Against this claim see Apostle *Aristotle's Categories and Propositions (De Interpretatione)* (1980).

As Terence Irwin (1988) notes, the phrase 'that which is of a nature to be predicated of a plurality of things' ('*ho epi pleionôn pephuke katêgoreisthai*') is ambiguous.[14] In using '*pephuke katêgoreisthai*' Aristotle can mean either that something is naturally disposed to be predicated (whether or not it is actually predicated) of a plurality, or that it is by nature actually predicated (i.e. must be predicated) of a number of things. Irwin argues for the latter reading, which requires that a universal be predicated of more than one thing whenever it exists. As evidence for his reading, Irwin points to *Categories* 14a7-9, where Aristotle says, "If everyone were healthy, health would exist but not sickness; and if everything were white whiteness would exist but not blackness."[15] It is clear from this passage that Aristotle takes instantiation by at least one thing to be necessary for the existence of a universal. Furthermore, it seems clear that Aristotle allows universals to go out of existence. On the reasonable assumption that an individual living in a world where everyone is healthy could become sick, Aristotle would also allow universals to come into existence.

Irwin argues that a reading of *De Interpretatione* 17a38-b1, which requires only possible plural instantiation of universals, conflicts with the *Categories* 14a6-10 demand that universals actually be instantiated.[16] However, it is not immediately clear that these requirements conflict. It seems perfectly consistent for Aristotle to demand in one place that a universal be instantiated to exist, and for him to maintain in another place that only universals are the sorts of things that can be predicated of a plurality of objects.

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[14]   See Irwin (1988), pp. 78-82, and the corresponding endnotes.

[15]   ὑγιαινόντων γὰρ ἁπάντων ὑγίεια μὲν ἔσται, νόσος δὲ οὔ· ὁμοίως δὲ καὶ λευκῶν ὄντων ἁπάντων λευκότης μὲν ἔσται, μελανία δὲ οὔ. (14a7-9)

[16]   I talk about a particular's "instantiating" a universal. However, we should keep in mind that all such talk will be analyzed by Aristotle in terms of his own fundamental relations, inherence and the said-of relation.

Irwin does not present an argument for his claim that the possible plural instantiation reading conflicts with the demand for actual instantiation in the *Categories*. However, perhaps he has something like the following argument in mind. Take these two principles:

> (PPI) Something is a universal if and only if it is possible that it be plurally instantiated.

> (NI) There are no uninstantiated universals.

(PPI) and (NI) are not inconsistent in themselves. However, they are mutually inconsistent with:

> (INT) There is an object that is both uninstantiated and possibly plurally instantiated.

The existence of such an object would be a counterexample to one of our principles—it would be a universal according to (PPI) but couldn't be a universal according to (NI). Notice, we need (INT), which is an existential claim, if we are going to argue that (PPI) and (NI) cannot both be true. It is not enough for it to be the case that, e.g., there are situations where nobody is sick but where it is still true to say 'It is possible that sickness belongs to more than one person.' The proponent of (PPI) and (NI) could accept that the latter claim is true, but deny that this involves any commitment to the actual existence of the universal *sickness*. We can represent the distinction here as a matter of scope. "There is an x, such that x is not instantiated by anything, and it is possible that x is instantiated by many things," is incompatible with (PPI) and (NI). Nevertheless, Aristotle could accept both of the following claims along with (PPI) and (NI): "It is not the case that anything is sick," and "It is possible that sickness belong to many things." He must require that the latter claim be taken as a *de dicto* and not as a *de re* possibility claim, so that it does not commit us to the existence of an object, *sickness*, which satisfies the open formula '*x* possibly belongs to many things.'

It seems to me that the right response for the proponent of (PPI) and (NI) would be simply to deny (INT). I see no compelling non-theoretical reason for holding (INT). Rather, it seems that whether we accept or reject (INT) will depend on what theory of universals we end up endorsing. So it is open to an interpreter to accept both (PPI) as an interpretation of the *De Interpretatione* passage, and to accept (NI) on the basis of *Categories* 14a6-10.[17]

Furthermore, as a result of taking the *De Interpretatione* passage to require actual plural instantiation of universals, Irwin is led to some problematic conclusions. For example, he tells us that Aristotle needs to recognize a class of entities called 'properties', which will be particular at some times and universal at others. For example, the property of being sick will exist and be a universal whenever there is more than one sick person, and will continue to exist when there is only one sick person but will cease to be universal and will become a particular. I have two worries about these sorts of entities. First of all, I have an intuition that universality and particularity are essential attributes of things. I don't see how we could say of a particular thing that it might have existed without being a particular, and I don't see how a thing can remain the very same entity when it goes from being a particular to being a universal.[18] Second, while Aristotle clearly accepts particulars and universals, there is no textual evidence that Aristotle accepts properties as a class of beings apart

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[17]   In fact, it might be too much to require even *possible* plural instantiation. Aristotle seems to recognize a universal *being-the-universe*, and holds that there could never be more than one universe. See the distinction between this universe (*hode ho ouranos*) and universe in general (*ho ouranos haplos*) in *De Caelo* (278a13ff). I discuss this case further below. Accordingly '*pephuke*' should not be taken to require metaphysical possibility, but only tells us what something's own nature is like. I might be of a nature to do something, even though external circumstances make it impossible for me to ever do x. This might even be true if the external circumstances exist of necessity.

[18]   There might be an argument here from the necessity of identity. This particular thing could not have existed without being this thing. When we consider any non-particular, however, it is unclear that we are considering an entity that is numerically the same as this particular.

from particulars and universals.[19] So, I think that there are both textual and philosophical reasons to deny that Aristotle accepts anything like properties in Irwin's sense. However, we seem to be able to hold that actual plural instantiation is necessary only by accepting properties.[20] Therefore, we should require only possible plural instantiation. Aristotle holds that universals are the sorts of things that can be predicated of a plurality of subjects, and he also holds that a universal cannot exist unless it has at least one instance. I now turn to some texts showing that Aristotle takes universals to be wholes containing particulars as parts.

The word Aristotle uses for universal, '*katholou*', is a technical term derived from the preposition '*kata*' (concerning), and the word for whole, '*holos*'. Aristotle's most common phrase for particular is '*to kath' hekaston*' ('the as concerns each'), but he sometimes uses '*kata meros*' ('as concerns part') as a synonym for '*kath' hekaston*'.[21] There is some reason to think that universals are wholes of which particulars are parts just on the basis of the words that he uses in talking about each. Furthermore, there is evidence in *Metaphysics* Δ that Aristotle is not using whole-part terminology non-standardly, but rather fully intends us to think of universals and particulars as wholes and parts.

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[19]   Irwin pg. 83, agrees that "Aristotle does not recognize such a thing as being a man, distinct from the particular and the universal; but he seems to need it…" If I am right, however, there is no need for Aristotle to countenance such an entity.

[20]   In the discussion of ontological priority in chapters 9 and 10, we will see that rejection of the actual plural instantiation view comes with a certain cost. Irwin is able to hold that an individual is not existentially dependent on its species. Socrates could exist independently of the universal *human*, since if Socrates were the only human, the universal would not exist. If we accept the view that I adopt here, that *human* would exist if Socrates were the only human, then Socrates seems to be existentially dependent on the species.

[21]   One nice example is at *Physics* 189a5-10, where Aristotle in the course of a single sentence switches from use of '*kath' hekaston*' to '*kata meros*', clearly intending the two as synonyms. For other examples, see Bonitz *Index Aristotelicus* pp.455-456. Aristotle also uses '*epi merous*' as a synonym for '*kath' hekaston*'. See *Nicomachean Ethics* 1107a30ff, and Bonitz op.cit.

In Δ.25, for example, Aristotle tells us that the species is both a portion ('*morion*') and a part ('*meros*') of its superordinate genus.[22] We should note that both species and genera are universals, and genera are said-of their species according to the *Categories*. Aristotle also tells us in Δ.26 that the universal is a sort of whole in the course of a general discussion of what it is for something to be a whole:

> That is called whole (1) which is a thing from which no part is missing out of which it in naturally said to be a whole, or (2) that which encompasses the things encompassed so that the latter are some one thing. And this (i.e. the encompassment) is two-fold. For either as (2a) each (of the things encompassed) are one, or as (2b) one thing from these (many things encompassed). (2a) For, on the one hand, the universal and what is said wholly as being some whole is universal in this sense: as a thing encompassing many by being predicated of each and by all of their being one taken individually. For example, man, horse, god, because all are living things.[23] (1023b26-32)

Aristotle first points out two main senses of 'whole', (1) and (2). The first sense of 'whole' belongs to things that are missing none of their parts (1). The second sense of 'whole' is the one that we need to focus on here. Aristotle tells us that a whole is something that encompasses things in a way that makes the things encompassed some one thing (2). Aristotle next distinguishes two ways in which something can

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[22]   1023b17ff: "Further, that into which a species might be divided without being quantity, are said to be portions of it, which is why they say that the species is a portion of the genus." ("ἔστι δ' ὡς οὔ. ἔτι εἰς ἃ τὸ εἶδος διαιρεθείη ἂν ἄνευ τοῦ ποσοῦ, καὶ ταῦτα μόρια λέγεται τούτου· διὸ τὰ εἴδη τοῦ γένους φασὶν εἶναι μόρια.")

          1023b22-25: "Further, the things which are in the formula making clear what each thing is [are parts]. Which is why the genus is part of the species, but in another way the species is part of the genus." ("ἔτι τὰ ἐν τῷ λόγῳ τῷ δηλοῦντι ἕκαστον, καὶ ταῦτα μόρια τοῦ ὅλου· διὸ τὸ γένος τοῦ εἴδους καὶ μέρος λέγεται, ἄλλως δὲ τὸ εἶδος τοῦ γένους μέρος."

[23]   "Ὅλον λέγεται οὗ τε (1) μηθὲν ἄπεστι μέρος ἐξ ὧν λέγεται ὅλον φύσει, καὶ (2) τὸ περιέχον τὰ περιεχόμενα ὥστε ἕν τι εἶναι ἐκεῖνα· τοῦτο δὲ διχῶς· (2a) ἢ γὰρ ὡς ἕκαστον ἓν ἢ (2b) ὡς ἐκ τούτων τὸ ἕν. (2a) τὸ μὲν γὰρ καθόλου, καὶ τὸ ὅλως λεγόμενον ὡς ὅλον τι ὄν, οὕτως ἐστὶ καθόλου ὡς πολλὰ περιέχον τῷ κατηγορεῖσθαι καθ' ἑκάστου καὶ ἓν ἅπαντα εἶναι ὡς ἕκαστον, οἷον ἄνθρωπον ἵππον θεόν, διότι ἅπαντα ζῷα·"(1023b26-32, reference numbers added) The point of Aristotle's example at 1023b32 is a bit unclear. He might be saying that *animal (to zôon)* is a universal, because it encompasses *human*, *horse*, and *god*, where each of these is one taken individually. Ross (1924) and Kirwan (1971) both take the passage in this way. As an alternative, we might take the example as saying that *human*, *horse*, and *god* are universals, because they each encompass things that are single living things (*zôon*), *human* so encompasses the individual humans, and so on.

encompass things in the way definitive of a whole. First, a thing might be a whole by encompassing things each of which is one taken individually (2a). Second, a thing might encompass several things that together make up a single whole (2b). As an example of the second case (2b), we might have a human body. The various parts of the human body make up one human body, but the hand and the leg are not single human bodies taken individually. Universals are wholes of the first type (2a). A universal encompasses many things by being predicated of each of them, where each of these things taken individually is one thing. For example, the universal *human* is a whole by being predicated of each of the many individual humans, each of which taken individually is one thing. The contrast between wholes of type (2a) and wholes of type (2b) is that the former are what we might call 'distributive wholes', while the latter are 'collective wholes'.

Universals are distributive rather than collective wholes. To get clearer on the distinction here, think about the universal *human*, and its relation to each of the particular humans. And contrast this with the relation that a human body bears to its parts. Each of the individual humans is one single human being. It is not the case, however, that each of the organs of a human body is a single human body. The various organs of a body form a pretty diverse collection of things, and these things must be integrated in a certain way to form one body. The various individual human beings, considered apart from their various accidents, form a homogeneous collection of things, and the existence of the universal does not require that they be integrated with one another in any way. At any given time, the species universal that encompasses the individual members of the species seems like a collection of perfectly similar atoms.

When we get to the higher genera, the story is a bit more complicated, since the various individual animals of different species are not perfectly similar to each other. However, *animal* resolves into parts, each of which resolves into perfectly

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similar parts. Furthermore, the immediate parts of *animal*, the various animal species, are presumably more similar to each other than any of them is to something outside the genus of animal. Furthermore, it seems that *animal* is a distributive whole in that each of the animal species count as a single animal-type, and each of the individual animals counts as a single animal-token.

While I think that we have seen some reason to think that Aristotle takes the relation between particulars and universals to be some sort of part-whole relation, it is still not clear exactly what the nature of this relation is. In the sections that follow, I try to get clearer about the nature of this part-whole relation.

Section 7.3: Are Aristotelian Universals Classes?

In his commentary on *Metaphysics* Δ.26, Christopher Kirwan (1993) tells us that Aristotle takes universals to be wholes in the way that the class of all living things is a whole. The class of living things has particular men, horses, gods, etc., as members. On such a view, the said-of relation is a class-membership relation. Kirwan also analyzes the claim that species are parts of genera in Δ.25 in terms of classes, and understands parthood in that chapter in terms of class-inclusion.

Irwin (1988) considers whether, when Aristotle tells us in the *Categories* that particulars belong in species and genera, he intends us to think of the relation between primary and secondary substances as class-membership.[24] Irwin argues that Aristotle cannot take universals simply to be classes, because classes are purely extensional with respect to their members while universals are not. For example, Irwin claims that the class of grammarians is identical to the class of human beings, since Aristotle takes all and only humans to be capable of grammar. However, Aristotle does not take the universal *grammarian* to be identical to the universal *human*. Universals cannot,

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[24] For other suggestions that Aristotle takes the universal-particular relation to be class-membership, see Lloyd (1966), Ackrill (1963).

according to this argument, be identical to classes. The argument in question mirrors what David Armstrong calls the "Coextension Problem" for class nominalism.[25]

However, even on the assumption that Aristotle regards universals as classes, I do not think that Aristotle's account of universals will fall victim to this objection. If Aristotle were to hold that universals are classes, he would be likely to hold that they are classes of the things that they are said-of. So, non-substantial universals would be classes of non-substantial particulars rather than classes of substances. *Grammatical* is not said-of Socrates, but rather of the NSP-*grammaticality* that inheres in Socrates. On the other hand, *human* is said-of Socrates. The full story here is a bit more complex. Take the sentence, "Socrates is grammatical". The truthmaker for this sentence is the inherence of an NSP-*grammaticality* in Socrates. There will be a universal in the category of quality said-of this NSP-grammaticality, the universal *grammaticality*. There will also be a universal in the category of Substance said-of Socrates, *human*. In addition to the simple particulars, Socrates and the NSP-*grammaticality*, there will exist what Aristotle calls a compound (*sunkeimenon*), the grammatical man (or grammarian).[26] Aristotle might accept that there is a class of grammarians, where this is a class of compound entities, but this will be identical neither to the class of humans nor to the class of NSP-*grammaticalities*.[27] An interpretation of universals as classes

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[25]   See Armstrong (1978) 25-36, (1989) 25-26.

[26]   Aristotle most clearly lays out this ontology in the course of his discussion of change in *Physics* I.7. I argue that the same ontology underlies Aristotle's thoughts in the *Categories*, and that the *Physics* gives conclusive evidence of Aristotle's acceptance of non-substantial particulars. The compounds in question are similar to what Gareth Matthews (1982) calls "kooky objects", but Matthews does not seem committed to the claim that these kooky objects are compounds of particulars. See chapter 4 for additional discussion of some of these issues.

[27]   I doubt that Aristotle will take there to be a genuine universal corresponding to this class, if we think of grammarians as compounds of grammaticality and a substance. Since I doubt that 'grammarian' refers to a single thing that is, unless it refers to the individual human being that is grammatical, I doubt that Aristotle will hold that there is a genuine species of grammarians. I think that Aristotle will have, in Armstrong's terminology, a sparse view about universals, on which not every general term will correspond to a real universal.

need not, therefore, fall to the co-extension problem.[28] Furthermore, we have not yet been given a reason to deny that universals are extensional.

This is not to say that there are no problems with taking universals to be classes of particulars. In the *Categories*, Aristotle asserts that the said-of relation is transitive. But class-membership is not transitive. Ackrill (1963) criticizes Aristotle on this score. Ackrill argues that "[Aristotle] does not distinguish between the relation of an individual to its species and that of a species to its genus." Kirwan also accuses Aristotle of failing to distinguish between class-membership and class-inclusion in his discussion of part and whole in *Metaphysics* Δ.25-26. However, to accuse Aristotle of such an oversight makes sense only if we think that he takes universals to be classes. It is equally plausible, and more charitable, to take Aristotle's assertion that the said-of relation is transitive to signal that he does not take universals to be classes of particulars.[29] Furthermore, as we will see below, universals seem to be said-of different things at different times, and could be said-of different things than they are actually said-of, while classes seem to contain their members essentially.

Section 7.4: Are Aristotelian Universals Mereological Fusions?

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[28]   On the interpretation that I put forward, Aristotle's universals are more similar to classes of tropes than to classes of thick particulars. See Armstrong (1989) for a discussion of the advantages of such a view over traditional class nominalism.

[29]   Notice that it will be equally problematic to take the said-of relation to be a class-inclusion relation. Inclusion is transitive, but no particular can be included in a class (unless we think that particulars are themselves classes, which is implausible). We might attempt to save the class construal of universals by holding that the said-of relation is a disjunctive relation: *either the converse of class-inclusion or the converse of class-membership*. Alternatively, we could define the said-of relation in terms of the ancestral of class-membership, *is a member of or is a member of a member of or ....* While these suggestions might work formally, I do not think that there are good grounds for attributing either position to Aristotle. Ultimately I think that the problem with understanding universals to be classes is that universals seem to have different identity conditions than classes do. Universals endure through time and are said of different particulars at different times. Classes, however, seem to contain exactly the members that they do essentially. Nevertheless, the fact that universals are distributive wholes does seem to give evidence that they are *more* akin to sets than to sums. I discuss this issue a bit further in chapter 8. Furthermore, the fact that a universal with a single instance can be nonidentical to that instance also seems to count as evidence that they are more like sets than sums. There are several issues here that merit further treatment.

As an alternative to the class-theoretic way of understanding the said-of relation, we might hold that Aristotle takes the relation between universals and particulars to be something like the *parthood* relation discussed in mereology.[30] Species will be parts of genera, and will have particulars as parts. Furthermore, individuals will themselves be parts of genera. Since parthood is straightforwardly transitive, this construal will not run afoul of Aristotle's claim that the said-of relation is transitive. Aristotle does not take the said-of relation to be reflexive, since the *Categories* clearly recognizes entities that are not said-of any subject. As a result, the sort of parthood involved in the said-of relation cannot allow that all things are parts of themselves. For present purposes, I think that we can go further, and say that Aristotle takes the said-of relation to be irreflexive.[31]

What emerges is a picture of the said-of relation as irreflexive, transitive, and asymmetric. Furthermore, there are some entities that are not said-of anything, while other things are said-of them. In these respects the said-of relation is formally akin to the converse of the *proper-parthood* relation of classical mereology, in which the entities that are said-of nothing act as mereological atoms. Aristotle, in fact, uses the term '*atomos*' (atomic/uncut) to describe entities that are not said-of anything. On this view, primary substances and nonsubstantial particulars are atoms, and universals are

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[30]   See Leonard and Goodman "The Calculus of Individuals and its Uses" (1940) for a presentation of the classical theory of mereology. See also Part I of Peter Simons *Parts* (1987), Peter van Inwagen, *Material Beings* (1990), and David Lewis *Parts of Classes* (1991) for in depth discussions of the nature of the part-whole relation. Part of what I want to claim in this chapter relies on my view that there is not a single well-characterized relation that deserves to be called **the** *part-whole* relation. In this view, I follow Simons (1987) and Kit Fine "Compounds and Aggregates" (1994), and "Things and Their Parts" (1999). Aristotle takes the relation between universals and particulars to be a different relation than the *parthood* relation talked about in classical mereology. Nevertheless, I think that it is legitimate to say that Aristotle takes particulars to be parts of universals.
[31]   I am not fully confident about this claim. See chapters 2 and 4 of this work. Aristotle tells us that if both the name of definition of one entity are properly linguistically-predicated of another, then the first is said-of the second. Since it seems that every entity that has a definition and a name will be such that its name and definition can properly be linguistically-predicated of it, *the said-of relation* would seem to be reflexive on its restriction to entities with definitions. On the other hand, Aristotle might really intend that predication involves distinct entities, and I can think of no case where he predicates a thing of itself.

wholes, which have these as proper parts. Construing the said-of relation

mereologically, therefore, allows us to capture some of the logical features of the

relation. We get the following analyses of the said-of relation and universality.

(OF1) $\forall x \forall y$ (x is said-of y iff y is a proper part of x).

(UN1) $\forall x$(x is a universal iff $\exists y$(x is said-of y)).

It will be helpful to have a more precise formulation of mereology to begin this

discussion. Following David Lewis in *Parts of Classes*, we can state the axioms of

mereology in a language containing both the singular constructions, familiar from

first-order logic with identity, and plural constructions.[32] We have plural constants,

e.g. '*the fs*'; plural variables, e.g. '*xs*', and plural quantifiers 'there are some *xs* such

that….'. We also have a primitive two-place predicate '___ is among__' (Ax*y(s)*)

which takes a singular term in the first argument place, and either a singular or a plural

term in the second argument place. We will also take as primitive a two-place

predicate, which can take only singular terms as arguments, '__is part of__' (Pxy). We

will then define a the predicates '__ overlaps__' (Oxy) and '___ is a fusion of ___'

(Fx*ys*) in terms of 'is among', 'is a part of' and identity.

x is a proper part of y $=_{def}$ (Pxy & x$\neq$y)

x overlaps y $=_{def}$ $\exists$z(Pzx & Pzy)

x is a fusion of the *ys* $=_{def}$ $\forall$z(Az*ys* $\supset$ Pzx) & $\forall$w(Pwx $\supset$ $\exists$u(Au*ys* & Owu)).[33]

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[32]   My presentation here closely follows that of Byeong-Uk Yi "Is Mereology Ontologically
Innocent" (1999). See also Lewis (1991), van Inwagen (1990), and Sider "Parthood" (2007). A whole
family of formulations of mereology can be found in Simons (1987). Simons is sympathetic to the view
that there is no *one* logic of *the* part-whole relation. Rather there is a family of different relations
governed by different axioms. For example, Simons thinks that the Principle of Unrestricted
Composition below is controversial. Van Inwagen and Merricks, for example, deny the principle of
unrestricted mereological composition. For more on plural quantification, and different ways to
interpret it, see George Boolos, "To Be Is To Be a Value of a Variable (or to Be Some Values of Some
Variables)" (1984), and"Nominalist Platonism" (1985). See also Byeong-Uk Yi "The Logic and
Meaning of Plurals: Part I" (2005) Yi "The Logic and Meaning of Plurals: Part II" (2006).
[33]   Following, Simons (1987) I understand all unbound variables to be bound by universal
quantifiers taking widest possible scope. As it stands right now the predicate '__is a fusion of__'
requires a plural term as the second argument. We might want to hold that every object is a fusion of

Lewis takes mereology to be defined by the following axioms.

(A1-3) '__is a part of__' is transitive, reflexive, and antisymmetric.[34]

(A4) *Unrestricted Mereological Composition:* If there are some *xs*, then there is a y such that y is a fusion of the *xs*.

(A5) *Uniqueness of Composition:* If there are some *xs* and y and z are both fusions of the *xs*, then y=z.

If we accept the conception of *parthood* defined by these axioms, there are five problems with the mereological interpretation of the said-of relation presented by (OF1) and (UN1). First, given axiom (A4), we are going to end up with many universals that Aristotle would not accept. Second, there seem to be cases where one thing is a proper part of another, but where the second is not said-of the first. Third, it seems that Aristotle will accept cases where a universal is said-of precisely one thing, but even a system as weak as Simons' *Minimal Extensional Mereology* will not allow a thing to have one proper part. Fourth, the parthood relation defined above is extensional, and it is impossible for two distinct objects to have all the same atomic parts. On the other hand, Aristotle seems to be able to allow that distinct universals can have all the same atomic parts.[35] I take a fifth problem to be closely related to the fourth. While the axioms above say nothing about what is possible or necessary of mereological fusions, the mereological fusions defined by the above axioms seem to be the sorts of entities that have the parts they do essentially. Aristotle, however, does

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itself. We might express this by introducing a plural term whenever we have a single object, say that object and itself. See Yi(1999).

[34] Improper parts are included as parts in the statement of these axioms. Since it is plausible to say that every object overlaps itself, and that at least some objects might have no proper parts, the definitions of "fusion" and "overlap" above assume that we are including improper parts as parts. If we want to eliminate improper parts as parts then we would have to change the definitions of fusion and overlap accordingly, and say that parthood is irreflexive and asymmetric. Although I take the said-of relation to resemble proper parthood more closely than parthood, I do not think that we lose anything in the way of clarity by going with Lewis' statement of mereology. Furthermore, the added complexity involved in stating everything in terms of proper parthood and identity is significant.

[35] Nevertheless, Aristotle can accept the claim that no two universals are said-of all the same objects. In this way, he can give non-duplication conditions for universals in terms of the said-of relation.

not take it to be essential to universals that they be said-of the particulars of which they are actually said. I discuss the first three objections in the remainder of this section. In the next section (VII.5), I turn to questions about extensionality and essentiality as these apply to the said-of relation.

I take the combined force of these objections to rule out a conception of the said-of relation in terms of the parthood relation defined by (A1)-(A5). Nevertheless, I think that Aristotle does understand universals to be wholes of which particulars are parts. Therefore, in section VII.6 I suggest that we need to attribute to Aristotle a conception of parthood other than that defined by (A1)-(A5). Furthermore, I think that the resulting conception of parthood is a reasonable one, and is closely related to the sense in which a composite enduring material objects has different material parts at different moments of its existence.

Any theory that attempts to characterize universals as mereological fusions will run into the problem that fusions seem to be too metaphysically cheap. The problem in question is familiar from arguments against class-nominalist analyses of universals.[36] (A4) requires that there is a fusion corresponding to every plurality. For example, there is the fusion (or class) containing every object in this room whose ordinary English name begins with the letter 'A'. Intuitively, however, there does not seem to be a genuine universal corresponding to this fusion. Universals, therefore, cannot be fusions as defined above. Furthermore, Aristotle is not going to accept that whenever we have a collection of entities, there exists something that is said-of all and

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[36]   See Armstrong (1978) and (1989). There are two responses to this objection against class-nominalism considered by Armstrong. (1) We can hold that only classes that are primitively natural count as universals. The first reply has some similarity with the sort of line taken by Lewis in "New Work for a Theory of Universals". (2) We can hold that only classes where the members perfectly resemble one another count as universals. The second reply works nicely in conjunction with the claim that universals are classes of tropes rather than of thick particulars.

only those entities.[37] (OF1) and (UN1), therefore, cannot be true, if we understand parthood in terms of (A1)-(A5).[38]

There are two lines of reply to the above objection. We might say that universals are mereological fusions, but deny unrestricted mereological composition (i.e. deny that axiom (A4) is part of the proper characterization of mereology). On the other hand, we might accept that unrestricted composition is true when it comes to the existence of mereological fusions, but deny that universals are fusions. We might, nevertheless, hold that classical mereology as defined by (A1)-(A5) deals with one of a variety of types of parthood. So while universals are not fusions of particulars, particulars are still parts of universals. I will consider each of these lines of reply, and argue that the second is preferable both on philosophical grounds and as an interpretation of Aristotle.

In support of the first sort of reply, we can point out that Aristotle seems to require that every whole be a type of unity.[39] In the case of material objects, Aristotle denies that every haphazard collection of entities will be unified in the right way to constitute a whole. Thus Aristotle thinks that a heap is not the same thing as a whole.[40] One way of interpreting Aristotle's thought on heaps and wholes would be to hold that he does not really think that heaps exist. Rather, the various entities that we normally take to constitute a heap in reality do not constitute anything at all. If we think that Aristotle denies unrestricted mereological composition in the case of material objects like heaps, then it seems natural for him to deny UMC when it comes to universals. Only those collections of particulars that form real unities exist. While Aristotle denies

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[37]   I do not think that Aristotle will accept even the weaker claim that a universal exists that is said-of every entity in such a diverse group. It does not seem that Aristotle accepts the existence of a universal like *entityhood*. Whether Aristotle accepts universals corresponding to the categories, *substance, quality*, etc. is a matter of some controversy.

[38]   A variety of this problem will also beset any attempt to understand universals as classes.

[39]   See *Metaphysics* Δ.26.

[40]   See Aristotle's discussion in *Metaphysics* Z.17.

that universals are one in number, he does want to hold that each universal is unified

by being one in species or genus.[41] Only collections that exhibit this sort of oneness

will constitute universals. However, the haphazard collections considered above will

not exhibit any type of unity, and will therefore not be genuine wholes according to

Aristotle.[42] In other words, Aristotle will not think that there exists any entity which is

the fusion of all and only the things in the room that have an English name beginning

with 'A'. Since there is no such fusion, we are free to retain (OF1) and (UN1), without

being committed to the existence of any bizarre universals.

I think that there are both interpretative and philosophical reasons to be

uncomfortable with the line of response offered above. First of all, mereology in the

sense outlined by (A1)-(A5) seems to me to be as close to ontological innocence as we

can get. David Lewis (1991) suggests that accepting the existence of the fusion of a

and b does not carry any further ontological commitment than did accepting the

existence of a and b in the first place. Lewis claims that composition is (at least in a

sense) identity. Take the sentence "a and b **just are** their fusion." Lewis suggests that

the 'are' in this sentence (which he calls 'the 'are' of composition') is the plural form

of the 'is' of identity.[43] Just as when c is identical to d, the acceptance of c and d

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[41]   See Aristotle's discussion of specific and generic sameness and oneness in the *Topics*,
especially in I.7. See also, *Metaphysics* Z.13. On the grounds that universals are not "thises", Aristotle
denies that they are substances. I think that we can reconcile what he says in Z.13 with what he says in
the *Categories* if we think that Aristotle is only denying that universals can be *primary* substances in the
Z.13 passage. But any substantial discussion of the issues raised by *Metaphysics* Z is beyond the scope
of this project.

[42]   There are some similarities between what I say here and Cresswell's (1975) view. Cresswell
suggests that there is a primitive dyadic relation $=_s$, which is the relation of specific sameness. This
relation divides up the world into equivalence classes corresponding to each of the species. To be a
given species is then definable in terms of an individual, and the class of things bearing $=_s$ to it. On the
position that I am considering, the said-of relation is the primitive relation by which certain particulars
constitute certain species and genera. Sameness in species is then defined in terms of two things'
belonging to a single whole. I think that these positions are, to an extent, formal variants of one another.
However, I think that Aristotle clearly takes sameness of species to be definable, and species-hood to be
primitive.

[43]   See Lewis (1991) pages 81ff.

doesn't go beyond the acceptance of *c*, when *a* and *b* are the fusion *ab*, the acceptance of *ab* doesn't go beyond the acceptance of *a* and *b*.

I am not sure that whether it is true to claim that the fusion *ab* just is *a* and *b*.[44] It seems to me that the fusion is neither of the parts, and that acceptance of the fusion requires the acceptance of something that isn't either of the parts that we accepted.[45] Nevertheless, as Sider (2007) points out, the relation of composition, like the relation of identity, seems to be a particularly 'intimate' relation.[46] Even if a mereological fusion is not identical to its parts, it still seems to be the case that it isn't anything 'over and above' or distinct from its parts. Fusions don't seem to be distinct from their parts in the way that most non-identical objects are distinct from one another.[47] Composition seems to be somewhere between complete identity and complete distinctness.[48]

Correspondingly, accepting the fusion of some entities doesn't involve an ontological commitment to anything *wholly distinct* from what I have already accepted. Once I accept a plurality of entities, accepting the fusion seems to involve

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[44]   Even stating the position sounds weird. Van Inwagen (1994) argues that the claim that the fusion is identical to the things fused is simply incoherent since one thing can't be identical to many. Against van Inwagen, both Byeong-Uk Yi (1999) and Sider (2007) argue that the thesis can be made coherent. Sider presents a rigorous analysis of the behavior of a plural identity predicate. Nevertheless, both Sider and Yi reject the thesis that *y* is composed of *the xs* only if *y=the xs*. Even Lewis is a bit circumspect in his claims. He often hedges, saying composition is 'analogous to' identity, or is 'in a sense' identity. He denies a position that he attributes to Baxter (1988) on which composition is more than just analogous to identity but actually is identity.

[45]   This sort of argument is rigorously developed by Yi (1999). The person who, nevertheless, wants to maintain the thesis that composition is identity needs to say that while the fusion isn't identical to either of the parts, it is identical to all the parts. I am really not decided on how this issue should ultimately be resolved.

[46]   See Sider (2007).

[47]   Lewis (1991) and Sider (2007) attempt to give a precise characterization of the senses in which composition is like identity and unlike relations between distinct objects.

[48]   I don't want to commit myself to the claim that composition is something like partial identity. Rather I think we might understand composition and what I am calling 'complete distinctness' as two different ways of being non-identical. See Lewis's claim that identity and distinctness fall along a continuum of relations.

only the acceptance that this plurality is properly treated as a single thing.[49] I have in mind something like the following story. I accept the existence of a number of cats. I then say that I think that there *are* a plurality of cats. Furthermore, I tell you that I think that this plurality of cats *is* a different plurality than the plurality of dogs.[50] I am now talking about various pluralities—this plurality, that plurality, etc. Now you ask me whether I believe that there are pluralities, and I say that I do. Furthermore, I start talking about pluralities and using singular terms for them. It seems to me that I have now accepted the existence of fusions.[51]

But if this is all that is involved in accepting the existence of a fusion, then it seems that whenever there are some things there will also be a fusion of those things. However, now we seem to have accepted the principle of unrestricted mereological composition. On the other hand, if we do deny unrestricted composition, then we must think that there is more to the existence of a fusion than just the existence of some plurality of objects.[52]

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[49]   It, nevertheless, seems false to me to say that there is *nothing* involved in the existence of the whole other than the existence of the parts, since it seems wrong to say that many things can be identical to one thing. If we accept unrestricted composition, then we are committed to the existence of more things than we would have been. However, the addition to our ontology seems to me to be harmless. For further discussion of mereology, the principle of unrestricted composition, and related issues, see Lewis (1991) and "Noneism or Allism" (1990); Van Inwagen "The Doctrine of Arbitrary Undetached Parts" (1981), (1990) and (1994); Simons (1987); and Sider *Four-Dimensionalism* (2003) and "Parthood" (2007).

[50]   Notice that this is a crucial step. I have gone from plurally quantifying over individual entities to singularly quantifying over pluralities of entities. The question that we need to ask is how much additional ontological commitment this step involves. I think that the correct answer to this question is: very little.

[51]   This sounds something like the reasoning attributed to Baxter by Lewis. However, Baxter seems to take the position that composition just is identity. In other words, there is no further ontological commitment at all involved in the movement from talking about many things to talking about the one composed of that many. Lewis seems to think that mereology is completely innocent even though composition is really only analogous to identity. The position that I am trying to endorse here is that there is some further ontological commitment involved in taking the many to be one fusion, but that the added commitment is minimal. We need to make this commitment if we want to take sentences like "There are two different pluralities involved when we consider the dogs and the cats."

[52]   What I have in mind here is an argument from the ontological innocence of mereology to unrestricted composition. For some other arguments in favor of unrestricted composition, see Lewis (1990) & (1991), Sider (2003) & (2007). The most persuasive argument seems to be the argument from the vagueness of possible restrictions on composition and the non-vagueness of existence, to the failure

Furthermore, while Aristotle does think that only certain objects count as unities, I do not think that he wants to deny the existence of all objects that are not unities. There is a subtle but important distinction to be made between two different views here. Take Aristotle's discussion of the difference between heaps and wholes at *Metaphysics* Z.16 and 17. It is clear that he denies that heaps are really unities. However, this claim can amount to very different things depending on whether we take Aristotle to think that only unities exist. If Aristotle thinks that everything that exists is a unity, then he will deny that heaps actually exist. The various entities that make up a heap might exist, but the heap itself does not. We can compare this view about heaps with the claims made by Van Inwagen (1990) and Merricks *Objects and Persons* (2003) about ordinary middle-sized inanimate objects like chairs. These philosophers are nihilists about things like chairs, and claim that there are atoms arranged chair-wise, but that there is no chair composed by these atoms. In a similar way, we might take Aristotle to mean that there are things arranged heapwise but no heaps. The denial of unrestricted mereological composition seems to entail that we talk about heaps in this way.

However, there are two problems with attributing the nihilist position to Aristotle. First of all, Aristotle doesn't seem to deny that heaps and other non-substances exist. Rather he seems to think that such things exist, but are somehow second-class objects. They are less *fully* real than substantial unities, but they are still real.[53] In *Metaphysics* Δ.6, Aristotle seems to think that unity is itself a matter of

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of such restrictions. The only coherent positions left according to this argument are (1) the position that there are no composites, or (2) the position that composition is unrestricted. But (1) is crazy, so (2) must be true.

[53]   I am not really sure how to talk about degrees of reality. Reality seems to me to be an all or nothing sort of affair. Say that we take the sentence $\ulcorner \alpha$ is real$\urcorner$ to be true if and only if there is some way of restricting our quantifiers so that the sentence $\ulcorner \exists x(x=\alpha) \urcorner$ comes out as true. (If there is such a thing as fully unrestricted quantification, then take this as the way of restricting the quantifier in all cases.) I think that we should take even the least real things on Aristotle's account to be real in this sense. Fuller

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degree. He tells us that the shin and the thigh are more of a unity than the leg, since the former do not bend. Nevertheless, I do not think that Aristotle wants to deny that the leg exists. Nor would he want to deny the existence of heaps.

We now come to an interesting question as to whether Aristotle would accept the existence of scattered objects, which many fusions would be. Assume that Aristotle accepts the existence of a heap, but denies the existence of scattered objects. Then when I take a heap and divide it into two discontinuous smaller heaps, I destroy one object and bring into existence two new objects. But to borrow an argument made by Peter van Inwagen (1990) with respect to similar cases, it seems odd to say that splitting the heap in half has really brought anything into existence that wasn't there already; I seem to have rearranged the world's furniture, but not to have changed the inventory of that furniture.[54] But if I haven't changed the inventory of the world by splitting the heap, then whatever existed before the split exists after the split. The only plausible candidate for something that exists both before and after the split is the fusion of the parts of the heap. But then fusions can exist in the case of scattered objects.

There is a further reason to worry about attributing to Aristotle a view on which entities arranged heapwise exist but heaps do not exist. Such a view seems to presuppose that the things that get arranged into heaps are themselves unities.

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degrees of reality can then be explained as minimal reality plus various other attributes, e.g. continuity, connectedness, functional organization, internal source of movement and change, etc.

[54]   Van Inwagen (1990) uses these arguments to show that we cannot restrict composition to cases where some objects are in contact with each other. He wants to argue that fusions only exist in the case where some atoms are "caught up in a life". I think that van Inwagen takes the wrong lesson from these cases. He seems to me to be right in saying that mere contact cannot bring new entities into existence. However, I take this to show that heaps are really nothing but fusions with parts that are in close proximity to each other. We can contrast this case with the case of true unities like organisms. In the case of an organism, there really is something new. But the new thing is not a fusion. The organism is not identical to the fusion of its parts. This seems to me to be the lesson that Aristotle wants us to take from these cases. The coming to be and perishing of substances really does change the number of things that exist in the world. The "coming to be" and "passing away" of heaps, or rocks, or even artifacts, on the other hand, are just rearrangements.

However, Aristotle takes the only full unities to be substances, the paradigmatic case of which are living organisms. Grains of sand, while they are more unified than heaps, would not be taken to be substances by Aristotle. So Aristotle isn't free to replace heaps with grains of sand arranged heapwise. If he accepted the existence of atoms, Aristotle might adopt a Democritean position and hold that these atoms were true unities. Heaps would be replaced with atoms arranged heapwise. However, Aristotle doesn't accept the existence of atoms. Rather he thinks that matter is infinitely divisible. Therefore, the 'arranged-heapwise' line of reasoning is not available to Aristotle.

It might be helpful to look at another example. Take a situation in which we would normally say that there is a puddle of water on the ground. Someone like van Inwagen or Merricks will deny that the puddle exists. Nevertheless they think that the water molecules (or perhaps only the hydrogen and oxygen atoms making up those molecules) do exist. Something or at least some things exist where we normally locate the puddle. But Aristotle doesn't believe that there are any smallest bits of water, and therefore will not think that any of the smaller parts of the puddle are any more of a unity than the original puddle. So, if Aristotle wants to claim that only substantial unities exist, he will have to deny that anything exists where we normally say that the puddle is. But this position seems utterly bizarre. Therefore, Aristotle can't think that only substantial unities exist.[55]

Lots of the stuff in Aristotle's world seems not to be organized into substantial unities. If only such unities existed, then we would have to deny the existence of a large chunk of the world. It seems unlikely, therefore, that Aristotle will require real

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[55]   Any adequate treatment of how Aristotle treats masses and stuffs is beyond the scope of this paper, but I think that it is clear that Aristotle takes non-unities to exist and to be distinct from *thises*. The underlying stuff out of which person is constituted is not a unity in the way that the person is. Questions about the survival of stuffs through generation and destruction are particularly tricky.

substantial unity to be a necessary condition for existence. It is more reasonable for Aristotle to hold that heaps exist, but that heaps are not real unities. The real unities will then be a subset of the entities that exist. On this view, Aristotle can accept unrestricted mereological composition—for every collection of entities there is something (the mereological fusion of those entities) that has all and only those entities as parts. He will not, however, accept unrestricted composition of real unities. It is not the case that whenever there is a plurality of objects there is a unity that has all and only those objects as parts.

We can think about universals in a similar way. There might be mereological sums of particulars in all sorts of cases. But only in cases where those wholes that exhibit the right sort of unity will there be universals, and only in these cases will the whole be said-of the parts. We can thus accept unrestricted mereological composition, but deny unrestricted composition in the case of universals.[56] It follows, therefore, that the said-of relation is not the converse of the proper parthood relation defined in terms of (A1)-(A5) and identity.

There are two different positions compatible with what has been said to this point. One position is that universality is fusion plus something else. In other words, not every fusion is a universal, but the fusions that meet certain further conditions are universals. So, for example, the fusion of all and only the humans is identical to the universal *human*. The other position is that universals are something other than fusions, and bear a different relation to their parts than fusions do. So there is the fusion of all and only the humans, and there is the universal *human*, which is not identical to the fusion of the humans. To be committed to universals is, therefore, to be

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56   In other words it is true that $\forall x \forall y \exists z(x$ is a proper part of z and y is a proper part of $z)$, but it is not true that $\forall x \forall y \exists z(z$ is said-of x and z is said-of $y)$.

committed to something more than just fusions.[57] I think that an examination to the remaining objections to the mereological interpretation of the said-of relation will show that Aristotle favors the second sort of view. I turn to those other objections now.

Although Aristotle says that particulars are atomic, he thinks that many of them have parts. An individual human being, for example, clearly has arms and legs as parts. However, Aristotle will not want to say that the universal *human* is said-of these parts, since a leg is not a human being. As a result, it seems that neither (OF1) nor (UN1) can be true, if parthood is understood as the single relation defined by (A1)-(A5) above. It seems that we can best respond to this objection by holding that Aristotle recognizes distinct varieties of parthood, and takes the parthood relation involved in (OF1) and (UN1) to be a different relation than the one holding between my leg and me. It seems clear that Aristotle recognizes distinct varieties of atomicity. Aristotle claims that primary substances and non-substantial particulars are atomic, but takes many of the former to have parts. Accordingly, it seems that having parts in one sense is compatible with having no parts in another.[58] Let's call the parthood relation which holds between the universal *human* and Socrates: *parthood$_1$*. Socrates is atomic$_1$ in the sense that he has no parts$_1$. And let's call the relation holding between Socrates' leg and Socrates: *parthood$_2$*.[59] While Aristotle will hold that each parthood relation is transitive, he will deny the validity of the following inference.

Socrates is a part$_1$ of *human*.

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[57]   In a similar fashion, I think that cats are not simply a special subset of fusions. Cats are not identical to the fusions of their parts. Cats aren't fusions at all. Nevertheless, my cat is a certain kind of whole and has certain atoms as parts. Therefore, there are things other than mereological fusions that wholes with atoms as parts.

[58]   Michael Frede makes a similar point that Aristotle recognizes different varieties of parthood, but takes this point in a very different way than I do. See my discussion of Frede (1972) in chapter 4.

[59]   By recognizing distinct varieties of *parthood*, Aristotle has a position contrary to that endorsed by Lewis (1991) and Sider (2007), who claim that there is only one *parthood* relation.

Socrates' leg is a part$_2$ of Socrates.

∴ Socrates' leg is a part$_1$ of *human.*

Being a part$_2$ of something is not sufficient for being a part$_1$ of that thing, and universals do not have the parts$_2$ of their particulars as parts$_1$. The kind of parthood involved in the said-of relation, parthood$_1$, is a different sort of parthood than that holding between Socrates and his leg. We will get clearer on the nature of parthood$_1$ by examining other objections to the mereological interpretation of the said-of relation.

The third objection to the mereological interpretation of the said-of relation arises from the fact that Aristotle seems to recognize cases in which there is precisely one particular that a universal is said-of. In *De Caelo* I.9, Aristotle considers the case of the universe. The universe is a particular, and is in the species *universe*. And Aristotle denies that the universe is identical to the species *universe*.[60] Furthermore, Aristotle does not even think that it is possible for there to be more than one member of the species universe, since the one universe that there is uses up all available matter.[61]

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[60]   When Aristotle writes, "therefore this universe and universe generally are different" ("*heteron ara hode ho ouranos kai ouranos haplôs*"), I take '*ouranos haplôs*' to refer a universal, and '*hode ouranos*' to refer to a particular. Irwin (1988) denies that Aristotle takes the property of being the universe to count as a universal, since it is not plurally instantiated. It is a little odd to think of the universe as a species, since it cannot have more than one instance. While I think that the cases like this one, involving species with exactly one instance of necessity, will be extremely rare, I do not think that Aristotle should deny that they are possible. Similarly, in the *Topics*, Aristotle denies that there can be a genus that has exactly one species. However, we might ask what would happen to the universal *animal* if all the animals other than the cockroach were to go extinct. Would Aristotle really want to claim that *animal* ceases to exist? Or would he just claim that *animal* no longer counts as a genus?

In addition, on the assumption that the universe is an individual entity, and that every individual entity belongs to a category, Aristotle will have to locate the universe in one of the categories (probably substance). However, in that case there would seem to be a single entity immediately said-of the universe. I suppose that Aristotle might deny that the universe is really an entity, but he seems to assume that it is in the *De Caelo* discussion.

[61]   If this is correct, then Aristotle doesn't even think that possible plural instantiation is necessary for universality. I think that this view can be rendered coherent with the definition of universality in the *De Int* provided that we are prepared to offer an alternative interpretation of the phrase '*ho epi pleionôn puphuke katêgoresthai*'. Aristotle is not saying that universals are possibly predicated of a number of things, but only that universals are *of a nature to be predicated of a number of things*. In other words,

If we think that the said-of relation can be defined in terms of parthood, then the species *universe* will have the universe as a part and will not be identical to the universe. The universe, therefore, will be a proper part of *universe*.[62] However, there will be no part of *universe* that is wholly distinct from the universe. It seems, however, that nothing can have a decomposition into a single proper part. It seems impossible, therefore, to hold that the universe is a proper-part of *universe* in the sense of *parthood* defined by (A1)-(A5). If *universe* has exactly one part, then that part will be identical to the universal *universe*. However, Aristotle does not think that this universe is identical to the species *universe*, despite the fact that this universe is the only member of the species.[63]

It should be noted that this objection to a mereological understanding of the said-of relation applies against systems of mereology even weaker than the one defined by (A1)-(A5). There are critics both of unrestricted composition and of

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universals are the sorts of things that are generally predicated of a plurality of things. *Universe* might belong to a type of entity that is normally predicated of a plurality, while being an exception to the normal run of things, This interpretation seems to represent a third way of taking '*ho epi pleionôn puphuke katêgoresthai*'. Compare this with the claim 'Dogs are four-legged' taken as a generic claim. Presumably, the truth of a generic claim is consistent with the existence of atypical cases. I see no reason to deny that Aristotle often makes such generic statements.

[62]   x is a proper-part of y $=_{def}$ x is a part of y & x$\neq$y. Or: x is a proper-part of y $=_{def}$ x is a part of y & y is not a part of x.

[63]   It is only fair to note that the class interpretation of *the said-of relation* will not face this problem, since {the universe}$\neq$ the universe. Notice how natural it is to say that there is a single member of a species, and how odd it sounds to say that there is a single part of a species. Nevertheless, I think that we should avoid a class-theoretic interpretation of the said-of relation. Issues that I look at in the next section effectively undermine any treatment of universals as classes, since classes are understood extensionally and have their members essentially. Lewis (1991) points out that much of the oddness of set theory and all of the ontological baggage of set-theory stems from the distinction between an object and its singleton. While the notion of a collection is somewhat intuitive, the notion of a collection that contains exactly one thing but which isn't that one thing seems a little strange. Whatever strangeness is involved in set-theory due to the distinction between a singleton and its sole member might also be involved in Aristotle's theory of universals. However, in many cases, we will be able to point to modal differences between a universal and a single particular falling under it. The universal *could have been said-of more things*. However, this will not work in the case of the universe and *universe*. It is nevertheless, interesting to note that Aristotle uses the phrase 'this universe' ('*hode ouranos*') in referring to this particular universe. On the assumption that *universe* ('*ouranos haplôs*') could have been said-of a different particular universe, we will be able to distinguish *universe* from the universe on modal grounds.

uniqueness of composition who still want to claim that there is a single sensible notion of parthood. Some of these critics might even allow that there are multiple senses of parthood, and that something can be atomic with respect to one and have parts with respect to another. However, the notion of a thing's having a proper part without having any other part wholly distinct from the first offends some of our basic intuitions about parthood.[64]

In the next section, I turn to the final objections to the mereological interpretation of the said-of relation. While mereology in the sense outlined in (A1)-(A5) forbids the existence of two distinct fusions of a plurality of atoms, Aristotle seems to accept the possibility of distinct universals said-of all the same particulars. Furthermore, while mereological fusions have their parts essentially, Aristotelian universals do not. In the course of examining these objections, I will develop an alternative interpretation of Aristotelian universals that avoids the problems that we have discussed. Furthermore, I will argue that the relation between universals and particulars on this view can legitimately be thought of as a type of parthood.

Section 7.5: Extensionality, Essentiality and Universals

We have looked at some objections to taking Aristotelian universals to be classes, and some objections to taking universals to be mereological fusions. In this section, I examine an objection that applies equally to mereological and class-theoretic theories of universals. Both classes and fusions are extensional and have their members or parts essentially. I will argue that we can state an extensionality principle

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[64] Aristotle's views about the universe and *universe* are inconsistent with what Simons (1987) calls "minimal extensional mereology", which we get by combining (A1-3) above with (a) the assumption that whenever objects overlap there is a maximal common part to the objects, and (b) *the weak supplementation principle* (WSP): if one object is a proper part of another, then there is a proper part of the second that is disjoint from the first. The WSP follows from (A1-5) and the definition of 'fusion', on the assumption that every object is a fusion of itself. Aristotle's view about the universe and *universe*, therefore, seems to go against the WSP. Nevertheless, I think that we can defend Aristotle's conception of universals as things that have their particulars as parts, and in doing so we recognize a variety of parthood that does not conform to the axioms of minimal extensional mereology.

for universals, but that this extensionality principle differs in important ways from the sort of extensionality principle that is normally associated with mereology. More importantly, universals are, in general, neither permanently nor essentially said-of any specific particulars.[65] But, as I will argue, sets and fusions have their members or parts essentially.

The extensionality of set-theory is expressed in terms of the following extensionality principle for sets:

(EXT$_{sets}$) Where A and B are sets, A=B iff $\forall x(x \in A \equiv x \in B)$.[66]

This tells us that we cannot have two distinct sets that have all and only the same members.[67] Mereological fusions on the conception of mereology constituted by (A1)-(A5) are also extensional. The uniqueness of composition axiom, (A5) guarantees that no two distinct entities will be a fusion of the same exact things. A statement of the extensionality principle for fusions directly in terms of parthood or proper parthood is a bit trickier to come by, but we can use the following ('<' means 'is a part of', '<<' means is a proper part of):

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[65]　This is not to deny that universals must be said-of *some* particular or other whenever they exist. All that I am denying here is that a universal can be identified with any specific extension of particulars. On the other hand, the set $\{\alpha\}$ seems to have the specific particular α as a part permanently and essentially.

[66]　The restriction to sets is necessary here, or the principle will entail the identity of all non-sets.

[67]　It is this extensionality principle that leads Irwin (1988, p80) to claim that universals are non-unit classes *intensionally conceived*. As I pointed out above, Irwin worries that the set of humans and the set of grammarians are identical while the universals *human* and *grammarian* are not. As I suggested, we can get around Irwin's worry by taking the constituents of *grammarian* to be NSPs rather than human beings. Furthermore, it is difficult to be a thoroughgoing realist about universals if facts about how we conceive of things get into the story of what universals are. Accordingly, I think that Irwin should hold that universals just are not sets. It might be better to hold that they something akin to what Gabriel Uzquiano "The Supreme Court and the Supreme Court Justices" (2004) calls 'groups'. Uzquiano's groups are not extensional, do not contain their members essentially, and are a different type of entity than sets. There are some important similarities between Aristotle's view of universals and Uzquiano's groups. However, the individuation conditions for Uzquiano's groups seem to depend on various facts about human intentions, which seems contrary to Aristotle's realism about universals.

(EXT$_f$)   Where A and B are mereological fusions:
                  A=B iff $\forall x(\neg\exists y(y<<x) \supset (x<A \equiv x<B))$.[68]

(EXT$_f$) tells us that two distinct objects cannot have exactly the same atomic parts.

Aristotle accepts that both primary substances and non-substantial particulars are atomic with respect to the said-of relation. We might think that we could state an extensionality principle for universals in terms of the said-of relation and particulars. We might get:

(EXT$_U$)Where A and B are universals:
          A=B iff $\forall x$(x is a particular $\supset$ (A is said-of x $\equiv$ B is said-of x)).[69]

However, I am not sure that Aristotle would accept this principle. Here is the worry. Imagine that there are two human beings (Al and Barbara) and one cat (Crusty). Furthermore, imagine that these are the only animals in existence. According to Aristotle, the universals *cat, human* and *animal* exist in addition to the particulars. *Animal* is said-of *cat*, *human*, and a, b and c. Now imagine that a and b cease to exist. Aristotle seems to think that *human* goes out of existence as well. It seems, however, that *cat* and *animal* continue to exist. If (EXT$_U$) is true, then *cat* and *animal* must be identical in this situation. However, there seems to be good reason for Aristotle to deny that these universals are identical. *Animal* used to have *human* as a part, but it

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[68]   The restriction to fusions is not needed here on the assumption that everything is a fusion of itself. The proper statement of an extensionality principle for mereology is a bit tricky. The following principle is true, but seems to be trivial:
          For all fusions A and B, A=B iff $\forall x(x<A \equiv x<B)$.
From left to right: Every entity is a part of itself. So if x=y then each is a part of the other. By transitivity of parthood it follows that everything that is part of one is part of the other. From right to left: if everything that is part of x is part of y, then x is part of y. If everything that is part of y is part of x, then y is part of x. But if x is part of y and y is part of x, it follows from the anti-symmetry of parthood that x=y. If we try to state the extensionality of fusions in terms of proper parts, we run into a different problem. We cannot say that A=B iff $\forall x(x<<A \equiv x<<B)$. The RHS will be true and the left-hand side false for distinct atoms. See Simons for more on statements of the extensionality of mereology. The (EXT$_{fusions}$) principle above is like Simon's formulation of an extensionality principle in terms of atoms. A=B iff A and B have all the same atomic parts. Notice that this principle will only be true on the assumption that the world is completely resolvable into atoms, since otherwise we could have two entities that overlap with respect to all their atomic parts even though each has different bits of gunk as parts. When it comes to the said-of relation, however, I think that Aristotle accepts this assumption

[69]   The restriction to universals is needed, or the principle will entail the identity of all particulars.

seems false to say that *cat* used to have *human* as a part.[70] So *cat* and *animal* are not

identical despite being said-of all the same particulars at a given time.

Notice, however, that we can formulate a different extensionality principle for

universals that avoids the counterexample outlined above:

(EXT$_{U*}$) Where A and B are universals,
A=B iff $\forall$x(A is said-of x $\equiv$ B is said-of x).[71]

If the said-of relation is irreflexive, then *cat* is not said-of *cat*, but *animal* is said-of

cat. If the said-of relation is reflexive, then *animal* is said-of *animal* but *cat* is not. So

the non-identity of *cat* and *animal* does not give us a counterexample to (EXT$_{U*}$).

However, the following case might pose a problem for (EXT$_{U*}$). Take the universals

human and *rational*. Both are said-of all and only the particular human beings.

According to both extensionality principles these universals cannot be distinct.[72]

Whether Aristotle can accept (EXT$_U$) will depend on whether he is willing to identify

a species with its final differentia. While I'm not sure how Aristotle would go on this

issue, I think that he should identify these universals.[73] If so, then he could accept

(EXT$_{U*}$).[74]

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[70]   While some philosophers might be inclined to maintain (EXT$_U$) of universals by holding that universals are wholes consisting of all past, present, and future individuals, I do not think that this position can be Aristotle's. I take Aristotle to be a presentist rather than an eternalist, and to hold that universals endure rather than perdure. When things endure, it is by being wholly present at distinct times. Furthermore, Aristotle takes universals to be things that really can come into and go out of existence. As Sider (2003) would put it, Aristotle takes the sentence (or the proposition expressed by the sentence) "Dinosaurs exist," to be false, even when this is construed as an existentially quantified statement with the least restrictive existential quantifier possible. This very same proposition used to be true. In other words, Aristotle would not accept that two different propositions were expressed by utterances of tokens of the same sentence-type at different times. The eternalist gloss on the situation here might be: it is timelessly true that dinosaurs exist at t_1, timelessly false that dinosaurs exist at t_2, and the sentence "Dinosaurs exist" expresses in any context of utterance the proposition that dinosaurs exist at t_n, where t_n=the moment of utterance. This does not seem to be Aristotle's way of thinking, although further treatment of the issue is beyond the scope of this paper.

[71]   The restriction to universals here is necessary, or else the principle will entail that all particulars are identical.

[72]   Unless *human* is said-of *human* and not *rational*.

[73]   See my discussion of the said-of relation and differentiae in chapter 2.

[74]   In a mereological system defined by (A1-5) above with atoms and no "gunk" (atomless stuff), (EXT$_{fusions}$) will entail:

(EXT$_{F*}$) For all complex things A and B,

I take the (EXT) principles proposed above to give us non-duplication conditions for certain kinds of entity. Each of these principles tells us that there cannot be two things of a given type each of which meets a certain condition. There is a difference, however, between giving non-duplication conditions for entities of a certain sort, and saying what the nature of those entities consists in. In giving non-duplication conditions it is enough for me to identify a property that no two objects of the same sort share. This may be a contingent property. For example, take the following non-duplication condition for electrons (where 'E'='is an electron' and 's(x)' is a function from entities to spatiotemporal extensions):

(NDP_e) $\forall x \forall y((Ex \& Ey) \supset (x=y \equiv s(x)=s(y)))$.

On the assumption that no two electrons can have one and the same spatiotemporal extension, this is a true non-duplication principle. (NDP_e) has no modal force, and tells us nothing about whether an electron could have had a different location. It seems clear to me that an electron could have had a different location. So (NDP_e) gives non-duplication conditions in terms of an accidental property of electrons.

In a similar way, none of the principles of extensionality has any modal force. We can accept the principles above, but hold that a given set, fusion, or universal *could have stood* in the constitutive relation in question to different entities. However, I think that both sets and sums are extensional in a stronger sense than is expressed by the principles above, in that these entities have the extensions that they do essentially. To be the set $\{\alpha\}$ just is to be the set containing only α. Nothing could be that very set

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A=B iff $\forall x(x<<A \equiv x<<B)$.
In other words, no two complex entities share all the same proper parts. This entailment holds because (A1)-(A5) entail the weak supplementation principle:

(WSP) $\forall x \forall y(x<<y \supset \exists z(z<<y \& \sim\exists u(u<<z \& u<<x)))$.
We noticed above that the corresponding supplementation principle fails in the case of universals and the said-of relation. Just as a universal said-of a single particular is not identical to that particular, two universals said-of precisely the same particulars can be distinct, provided that one is said of the other. What needs to be ruled out, if Aristotle accepts (EXT_{U*}) is the possibility that two distinct universals neither of which is said-of the other can be said-of precisely the same particulars. I take it that Aristotle would accept this principle, *modulo* worries about differentiae.

and have different members. Furthermore, nothing else could have exactly the members that this set has.[75] Notice that these claims don't follow from the normal set-theoretic axioms, but from intuitions about what sorts of things sets are. If these claims are right, then we are in a position to say something stronger than merely that no two sets actually have all the same members. We can say that sets are defined by their members.[76]

(DEF$_{sets}$) Necessarily, if A is a set and *the fs* are all and only the elements of A, then A=$_{def}$ the set having as elements all and only *the fs*.

The use of '=$_{def}$' in the (DEF$_{sets}$) has modal force. I take it to follow from a sentence of the form $\ulcorner \alpha =_{def} the\ \varphi \urcorner$ that anything which is the φ in any world is identical to α, and that nothing which fails to be the φ in any world is identical to α.[77] The (EXT$_{sets}$) principle, therefore, follows from (DEF$_{sets}$).[78]

In a similar way, the axioms of mereology (A1)-(A5) do not tell us anything about the essences of fusions. Nevertheless, while more controversial than the

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[75]   See Sharvy (1968) for some discussion of the claim that sets can't change their members. I think that related considerations show that sets don't have different members in different possible situations. Lewis (1991) seems to disagree with this intuition. He allows that there could be counterpart relations such that the counterpart of α is not a member of the counterpart of $\{\alpha\}$. Part of what is going on here involves Lewis' rejection of *de re* modality (or at least of *de re* essentiality) in favor of counterpart theory, but this gets beyond the scope of this paper. I will assume that there are facts about the essences of objects that are not context-relative or dependent on our theoretical concerns.

[76]   I have in mind here something like real definition—the essence of this set is that it is the set of precisely these members. The notion of real definition that I have in mind here is the one suggested by Kit Fine's treatment of essentiality. See chapter 10 for some discussion.

[77]   I do not know what to say about the existence of sets in worlds where one of their elements fails to exist. In any case, if the sentence $\ulcorner \alpha = the\ \varphi \urcorner$ is false at a world because nothing is the φ in that world, this must be compatible with the truth at this world of $\ulcorner \alpha =_{def} the\ \varphi \urcorner$. There are a number of tricky issues involved in trying to give a modal characterization of essentiality, and I'm not sure that it is possible.

[78]   Tweedale (1987) p425 suggests that Aristotelian universals are classes, but that "…one must be careful to mean by a class something which can survive changes in its membership roll, and not the sets of modern set theory." I think that any entity that can survive a change in its membership roll is not a class at all. Tweedale also compares Aristotle's notion of a universal to Russell's notion of a class as a numerical conjunction. However, it seems to me that Russell's numerical conjunctions are like the sets of modern set theory in that the conjunction essentially contains each of its conjuncts. One possibility would be for Tweedale to take Aristotelian universals as groups in the sense discussed by Uzquiano (2004). Groups, however, are not classes at all. They are entities of a new sort that coincide with classes at various times and in various possible situations, without being identical to the classes with which they coincide.

corresponding claim about sets, the claim that mereological fusions have their parts essentially strikes me as quite plausible.[79] This intuition strikes me as the flip-side of intuitions about the ontological innocence of mereology which lead to the acceptance (A4) and (A5) above. If there is little or nothing involved in the existence of a fusion beyond the existence of its parts, then it seems that the existence of the fusion is tightly connected to the existence of the plurality. The closer the relation between a fusion and a plurality of parts is to identity the stronger become intuitions in favor of mereological essentialism. On the other hand, the more we are willing to hold that an entity could have had different parts, the less likely we are to think that this entity is nothing distinct from the plurality of its actual constituents. If this reasoning is correct, then mereological essentialism about mereological fusions in the sense defined above seems to be warranted.[80] Both (A4) and (A5) follow from the idea that a given mereological fusion is essentially a fusion of its parts. We can state a principle for fusions similar to (DEF$_{sets}$). The extensionality principle for fusions, (EXT$_f$), follows from (DEF$_f$).

(DEF$_f$) Necessarily, if A is the fusion of *the fs*, then A=$_{def}$ the fusion of *the fs*.

While the (EXT$_{U*}$) principle listed above might give non-duplication conditions for universals, it doesn't seem to be essential to a universal that it be said-of precisely the objects that it is actually said-of. In fact, Aristotle thinks that one and the same universal is typically said-of different objects at different times. Therefore, a universal can be neither a set nor a fusion of particulars.

Nevertheless, Aristotle does seem to think that particulars are parts of the universals that are said-of them. We should conclude that Aristotle has in mind a type of parthood other than that defined by (A1)-(A5). In the next section, I suggest that the

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[79]   Both 'fusion' and 'part' here are to be understood as they are defined in (A1-5) above.
[80]   For the opposite view, see van Inwagen "Can Mereological Sums Change Their Parts" (2007).

sort of relation that Aristotle has in mind bears some similarities to the sort of parthood relation that holds between a complex material object that can survive changes in its parts, and the parts that constitute the object at a given time.

Section 7.6: Universals, Particulars and Constitution

I will begin this section by telling a familiar story about the relation between me and the atoms out of which I am composed. I like this story, and think that it is, for the most part, a true one. Nevertheless, almost every claim made is controversial and has been denied. It is not my aim here to defend this story about material constitution. Rather, I want to use the story about material constitution to elucidate what I take to be Aristotle's view about the relation between universals and particulars, which I think is analogous in many respects to the relation between me and my atoms on this story.

I take myself to be a concrete material object that exists right now. All of me exists right now, not just a part of me. I also existed a few months ago when I wrote an earlier version of this chapter, and all of me was around then as well. Right now, I am wholly constituted by some atoms (call these '*the fs*'); in other words, right now each of *the fs* is a part of me and I do not have any parts that fail to overlap with at least one of *the fs*. A few months ago I was wholly constituted by some other atoms (call these *the gs*'). A few months ago, there was an object that was the fusion of *the gs* (call it the g-fusion). Let's assume that none of *the gs* has been annihilated over the past few months. Given (A5) above, the g-fusion still exists. If, as I have argued, it is essential to the g-fusion to have each of *the gs* as parts, then the g-fusion has each of *the gs* as a proper part right now. However, I do not have each of *the gs* as a proper part right now. Leibniz's Law is true, and no object that has each of *the gs* as a proper part is identical to any object that fails to have any of *the gs* as a proper part. Therefore, I am not now identical to the g-fusion. Identity is a relation that holds between a thing and itself at all times at which a thing exists, and in all possible situations in which a thing

exists. Identity is neither temporary nor contingent, and is neither sortal-relative nor relative to anything else. It follows that I am not now, nor have I ever been, identical to the g-fusion. Similar reasoning shows that I am not identical to the f-fusion. I don't seem to be identical to any fusion of atoms at all. It seems that then that my commitment to my own existence requires me to accept something other than atoms and fusions of atoms. Nevertheless, at any time that I exist, I seem to be wholly composed out of some atoms. I don't seem to have any other parts.[81] These atoms are each parts of me at that time, and that I am a whole constituted by them at that time. Therefore, there is a sense in which, at any given time, I am nothing *beyond* the atoms that compose me at that time.[82]

I take Aristotle's position on universals to be similar in several respects to the position on things like me outlined in the preceding paragraphs. I take Aristotle to be a presentist and to be endurantist about universals. Aristotle's presentism should also be contrasted with the position that D. M. Armstrong (1978) calls an "Aristotelian" view about universals. Armstrong's view is eternalist, in that existence claims range over all of space-time. For Armstrong if a universal is ever instantiated, then it is always true to claim that the universal exists. So, the universal *Human* existed before the earth formed, and will exist after all individual humans are gone. Aristotle, on the other hand, seems to hold that it is false to claim that a universal exists at any time when

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[81] On the story that I am considering, my hands, fingernails, and even the electrons in the atoms of my fingernails count as parts of me, but my sense of humor and height do not. Perhaps there are different senses of 'part', and my properties are parts of me in some other sense, but I am ignoring this other sense for now. See Williams (1953) for a view on which particulars have tropes as parts.

[82] I am wholly composed by a plurality of atoms, but I am identical neither to that plurality nor to the fusion of the atoms in that plurality. For more on the view that constitution is not identity, see Mark Johnston's aptly titled "Constitution is not Identity" (1992). See also David Wiggins *Sameness and Substance* (1980) and *Sameness and Substance Renewed* (2000). I think that the relation between me and this particular collection of atoms organized in this way is a variety of realization, and various facts about me are realized in facts about this organized collection of atoms. Similarly, I think that various facts about Aristotelian universals are realized in facts about their constituent particulars.

there are no particulars that it is said-of. A claim that a universal exists (made at a certain time) will be true only if the right sorts of particulars exist at that very time.

I also think that Aristotle takes universals to persist by enduring—a universal exists at different times by being wholly present at each of those times.[83] One and the same object is composed of different particulars at different times. Aristotle's position is to be contrasted with a position on which universals perdure, according to which a universal exists at different times by having distinct temporal parts present at each time.[84]

Aristotle thinks that the universal *human* that existed in the past is identical to the universal *human* that exists now. Many individual human beings that used to be part of the universal *human*, however, have ceased to exist. *Human* has different individual human beings as parts now than it did in the past. It follows that *human* is not identical to any fusion of individual human beings. Nevertheless, Aristotle takes each individual human being that now exists to be a part of the universal *human*, and claims that *human* is not something beyond the particulars that make it up. Given the similarity between Aristotle's views on the relation between universals and particulars and the views outlined above about the relation between human beings and their

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[83]   By "wholly present" in this context, I mean simply that every part of a thing exists and is a part of the thing at the time in question. A universal does not at this time have anything as a part that does not exist at this time. I take Aristotle to be a presentist, and to think that a present-tense claim like 'α is a part of β' to be false when α used to be, but is no longer a part of β. To say that a thing was wholly present at an earlier time, will be only to say that everything that was a part of a thing existed and was a part of the thing in the past. There are a number of tricky issues involved in stating any of these positions. For a careful analysis, see Sider (2003).

[84]   The idea behind perdurance is that an entity is extended in time as well as in space. Just as I occupy different regions of space at a time by having spatial parts that occupy each of these regions, so I am present at different times by having distinct temporal parts at each of those times. For a discussion of this distinction, and some arguments that ordinary objects like human beings persist by perduring, see David Lewis "Survival and Identity" (1983). We also need to contrast Aristotle's position with the claim that universals timelessly contain all past, present, and future particulars of a certain sort as parts, or that they timelessly and necessarily contain all actual and possible particulars of a certain sort as parts.

atoms, I think that it can be somewhat useful to think of the relation between universals and particulars as a kind of constitution.

Nevertheless, there are some striking differences between the two sorts of constitution relations under discussion, and these should be noted. In one way, universals are a good deal more compositionally plastic than human beings are. For a human being to exist, a huge number of atoms of various types have to be arranged in a particular way. For an Aristotelian universal to exist, it suffices that particulars of a certain sort exist. These parts do not need to be arranged in any particular way, nor do they need to perform some sort of coordinated function. I even think that Aristotle will allow a universal to be constituted by a single particular.[85] However, a universal cannot exist without being constituted by at least one particular, which is why *sickness* does not exist when everyone is healthy. On the other hand, there are strict limits on what sorts of things can be parts of a universal. Only humans will be parts of *human*, while an organism might have all kinds of atomic parts.

The existence and identity conditions of universals, therefore, seem to be different than those of ordinary complex concrete particulars, and the analogy between universals and organisms cannot be pushed too far. It is, in fact, quite difficult to think of any precise analogue for Aristotelian universals, but the following may be a step in the right direction.

Imagine that the universe contains a number of atoms, each of which must be in one of four states at any given time: earth, air, fire or water. Furthermore, imagine that atoms change state over time. Say that we identify an entity, call it Walter. At any given time, Walter is entirely composed out of all the atoms that are in the water state

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[85] Generally, the universal in question existed before the particular that is currently its only part and will continue to exist when that particular perishes (provided other particulars of the right sort exist). Nevertheless, if what was said above about the universe and *Universe* is right, then Aristotle can take a universal to be non-identical to a single particular which constitutes it at every time at which it exists.

at that time. It is necessary and sufficient for an atom's being a part of Walter at a time that the atom is in the water state. Walter is composed out of different atoms at different times, but doesn't exist unless at least one atom is in the water state.

Walter seems to be something like a scattered particular or a mass of stuff in that it lacks any interesting structural properties. However, Walter can have different parts at different times. On the assumption that masses, like fusions, have their parts essentially, Walter can't simply be identified with the mass of water existent at any time. If we were to accept the existence of Walter, therefore, we would accept something other than atoms and fusions of atoms.[86]

My point here is not to say that we are forced to accept the existence of something like Walter in the world under consideration. It might, in fact, be more reasonable to reduce all talk about Walter to talk about atoms, scattered masses and fusions of atoms. Under what sorts of circumstances would it be reasonable to posit the existence of something like Walter in addition to atoms and fusions of atoms? While I have no precise answer to this question, we might be tempted to accept the existence of such a thing if there were stable facts about the totality of water through the various changes in the atomic composition of the totality of water. Furthermore, were we to explain certain facts about the current totality of water by talking about past facts about the totality of water, we might be inclined to accept something like Walter as an enduring entity.

As an example, let's take seriously Anaximander's claim that the elements pay restitution to each other for past injustice.[87] If the wet oversteps its boundaries, then the dry will obtain redress by extending into the domain of the wet. The dry is taking

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[86] Notice that we are adding to our ontology only if we take Walter to be an entity. If we only think that we have a term 'Walter' that means something like 'the current mass of water', we will not yet have any additional entity.

[87] See Theophrastus *Dox.* 477.

back something from the wet, i.e. from the same entity that overstepped its bounds previously. It makes some sense to think of the wet of Anaximander as something like Walter (or perhaps like a non-atomic gunky version of Walter) in the story above.[88]

My suggestion is that Aristotelian universals are something like Walter in the story above. Whether a given particular is part of a universal depends only on the intrinsic character of that particular. To be a universal is to be the thing that is said-of all the entities of a certain sort. For example, *human* is the thing that is said-of all and only the particular humans.[89] However, there are certain stable facts about this universal that remain true through constant changes in the particulars that compose it. For example, *color* always inheres in *body*, and *animal* is always said-of *human.*

I would like to conclude this section by examining a passage from the *Posterior Analytics* in light of the theory of universals that I am attributing to Aristotle. In the course of discussing the superiority of universal demonstrations to particular demonstrations, Aristotle writes:

> Further, if there is a single account of the universal and it is not homonymous, then it [the universal] will be something no less than the particulars, but rather [will be something] more so, insofar as the imperishable things are in these while indeed the particulars are

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[88]   For the sake of comparison, take the fact that I owe someone ten dollars because I lost a bet. I am not sure that it is impossible to translate talk of personal obligation into talk about the histories of atoms and fusions of atoms. However, I have a hard time seeing how the story would go. It is certainly simpler to take talk of obligation at face value, and to hold that there are enduring and variably constituted persons who have certain obligations because of their own past actions. The latter story is nonreductive, in that it accepts something other than atoms and sums of atoms.

[89]   Two things should be noted here. First of all, as it is possible for there to be different totalities of entities of a given sort at different times and in different possible situations, a universal can be made of different things at different times and in different possible situations. Second, on pain of circularity, we cannot both define universals as the wholes made of certain sorts of particulars, and define what it is to be a particular of a certain sort in terms of being part of a universal. In chapter 10, I will suggest that particulars are not the sorts of things that they are *because* universals are said-of them, but that universals are said-of them *because* they have the natures that they do. We will see that this view requires us to have a different account of what it is for a particular to have the nature that it does. I argue in chapter 10 that Aristotle does not think that the individual humans are human *because* they bear a relation to the universal. Rather the particulars have the natures that they do primitively. I take this to be a crucial difference between Aristotle and Plato. For Plato, what it is to be a particular of a certain sort just is to be a reflection of a certain Form; for Aristotle, what it is to be a universal is to be the thing said-of such and such particulars.

perishable. Still it is not necessary to lay down that this [the universal] is something beyond (*para*) these [the particulars], just because it makes evident one thing, any more than [it is necessary] in the case of other things which signify not a substance but a quantity, relative, or action. (85b15-22)

Aristotle thinks that particulars are generally rather short-lived objects. An individual cat like Josh perishes after a short time. Further, when Josh perishes all the facts of which Josh was a constituent perish as well.[90] However, there are some facts about the world that Aristotle does not take to be perishable; these facts are the concern of science. The constituents of these facts must be imperishable.[91] These universals count as "something" (*ti*). Furthermore, insofar as universals are eternal they appear to have a better claim than particulars to thing-hood or substantiality.

Aristotle has now come dangerously close to endorsing a Platonic theory on which universals are separate forms and primary substances. In the next sentence, he strongly repudiates such a Platonic view, telling us that nothing he has said requires that universals are anything *beyond* the particulars. In my view, Aristotle takes the fact that universals are constituted by particulars as sufficient for claiming that universals are nothing *beyond* those particulars. At the same time, Aristotle is able to claim that universals are real things, neither identical to nor reducible to the particulars or collections of particulars out of which they are constituted. Viewing the said-of

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[90]   This follows if we take Aristotle to be a presentist. The only entities that exist are the entities that exist now, and facts exist only when the constituents of those facts exist.

[91]   There is a question about whether Aristotle takes all universals or only some to be imperishable. In the *Categories*, Aristotle tells us that sickness ceases to exist when everyone is well. However, he here seems to suggest that universals cannot perish. Part of the question turns on what it is to be for a thing to perish. If the last sick person becomes healthy, then *sickness* ceases to exist. When a new person becomes sick, *Sickness* comes into being. Are the two *sicknesses* identical? If so, is it correct to say that *sickness* ever perishes? Given Aristotle's general thoughts on the eternality and regularity of the world, it is doubtful that he thinks that any universals suffer final and ultimate perishing. Also, Aristotle sometimes seems to think that species are eternal, but it seems possible to kill all the members of a species. If species are nothing beyond their members, how can they then be eternal?

relation as a kind of constitution relation thus allows Aristotle to escape both Platonism and nominalism about universals.

In the next section, I return to Aristotle's claim that a universal nonsubstance can inhere in a particular substance, on which it is not ontologically dependent. I examine some of Aristotle's views about predication, and the way in which particular predication interacts with universal predication. I suggest that Aristotle's problematic statements at 2a34ff results from confusion about how predication interacts with parthood.

CHAPTER 8

PREDICATION AND INHERENCE

Section 8.1: Introduction

I have argued that Aristotle takes inherence in a subject to involve ontological

dependence on that subject, and I have sketched an account of Aristotelian universals

on which they are wholes constituted by different particulars at different times. In this

chapter, I return to Aristotle's problematic claim at 2a34ff that universal non-

substances inhere in particular substances. Like Ackrill, I take this passage to involve

a mistake on Aristotle's part. Unlike Ackrill, however, I do not think that Aristotle is

simply being careless. Rather I think that Aristotle's mistake results from indecision or

confusion over how to deal with some subtle issues in his ontology.

In this chapter, I examine three possible sources of confusion. First, on the

interpretation that I have been proposing, Aristotle wants to explain predication in

terms of the inherence and said-of relations. The problematic assertion at 2a34ff could

result from an attempt to give too strict an analysis of predication. Second, I argued in

the last chapter that Aristotle wants to give an account of universals that avoids both

Platonism and nominalism. The claim at 2a34ff is what we would expect if Aristotle

were to go farther in the nominalist direction and to identify universals with extensions

of particulars.

A third possible source of confusion is closely related to the first two.

Aristotle gives one account of predication on which predicating something of a

universal crucially involves predicating it of the particulars that the universal is said-

of. Let's call this sort of predication, 'predication *simpliciter*'. When we are talking

about predication *simpliciter*, universals inherit the predicates of their particulars,

because something's being predicated of some particulars is both necessary and

sufficient for its being predicated of a universal. Furthermore, particulars inherit the predicates universally predicated of their superordinate universals. If something is predicated *simpliciter* of the whole of a universal, then it is also predicated *simpliciter* of every particular that the universal is said-of. We can give necessary and sufficient conditions for a thing's being predicated *simpliciter* of a universal in terms of whether it is predicated of some or all of a collection of particulars. If predication *simpliciter* were sufficient for inherence, then Aristotle's claims at 2a34ff would follow.

However, in the *Posterior Analytics* I.4 Aristotle carefully describes a few types of predication that are of special importance to science, *kath' hauto* and *katholou* predication. Neither *katholou* nor *kath' hauto* predication of a universal subject can be reduced to predication of particular subjects—and particulars do not inherit the *kath' hauto* predicates of their universals as *kath' hauto* predicates. I will argue below that there is a close connection between inherence and *kath' hauto* predication. Aristotle's mistake at 2a34ff might result from a failure to carefully distinguish predication *simpliciter* from *kath' hauto* or *katholou* predication. Furthermore, the sort of mistake that Aristotle makes in holding that inherence behaves like predication *simpliciter* rather than like *kath' hauto* predication is closely related to a mistake about the way in which constitution interacts with modality.

I am not in a position to say for certain what led Aristotle to make the mistake that he makes in claiming that universals inhere in particulars, but I hope that, in the course of examining some possible sources of this mistake, we will come to a better understanding of some fundamental issues in Aristotle's ontology. I end this chapter with my own suggestion about what Aristotle should have said at 2a34ff and suggest that the revised version is enough to secure what Aristotle really wants in that passage—namely the primacy of primary substance.

Section 8.2: Direct Versus Ultimate Subjecthood

It will be useful to begin by taking another look at the problematic passage at *Categories* 2a34-b6.

> All the other things are either said-of the primary substances as subjects or are in these subjects. This is clear from an examination of each case. For example, animal is predicated of human, and therefore also of the particular human; for if it were predicated of none of the particular humans, neither would it be predicated be human at all. Again, color is in body, and therefore also in the individual body; for if it were not in some of the particulars, neither it would not be in body at all. Therefore, all the other things are either said-of the primary substances as subjects or are in these subjects. Accordingly if the primary substances did not exist, it would be impossible for any of the other things to exist. [For all the other things are either said-of these or are in these as subjects, so that if the primary substances did not exist, it would be impossible for any of the others to exist.][1](2a34-b6)

Aristotle's main point in this passage is to emphasize the ontological primacy of primary substances. Primary substances are ontologically primary because they are subjects for all other things, and as a result no other things could exist without primary substances.

Prior to this passage, Aristotle has already mentioned two ways in which one thing can be a subject for another: the second can inhere in the first or the second can be said-of the first. It therefore seems natural for Aristotle to try to establish the primacy of primary substances by showing that they are subjects for all other entities

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[1]   τὰ δ' ἄλλα πάντα ἤτοι καθ' ὑποκειμένων λέγεται τῶν πρώτων οὐσιῶν ἢ ἐν ὑποκειμέναις αὐταῖς ἐστίν. τοῦτο δὲ φανερὸν ἐκ τῶν καθ' ἕκαστα προχειριζομένων· οἷον τὸ ζῷον κατὰ τοῦ ἀνθρώπου κατηγορεῖται, οὐκοῦν καὶ κατὰ τοῦ τινὸς ἀνθρώπου, – εἰ γὰρ κατὰ μηδενὸς τῶν τινῶν ἀνθρώπων, οὐδὲ κατὰ ἀνθρώπου ὅλως· – πάλιν τὸ χρῶμα ἐν σώματι, οὐκοῦν καὶ ἐν τινὶ σώματι· εἰ γὰρ μὴ ἐν τινὶ τῶν καθ' ἕκαστα, οὐδὲ ἐν σώματι ὅλως· ὥστε τὰ ἄλλα πάντα ἤτοι καθ' ὑποκειμένων τῶν πρώτων οὐσιῶν λέγεται ἢ ἐν ὑποκειμέναις αὐταῖς ἐστίν. μὴ οὐσῶν οὖν τῶν πρώτων οὐσιῶν ἀδύνατον τῶν ἄλλων τι εἶναι [πάντα γὰρ τὰ ἄλλα ἤτοι καθ' ὑποκειμένων τούτων λέγεται ἢ ἐνὑποκειμέναις αὐταῖς ἐστίν· ὥστε μὴ οὐσῶν τῶν πρώτων οὐσιῶν ἀδύνατον τῶν ἄλλων τι εἶναι.] (2a34-b6c)

Ackrill (1963) suggests that the bracketed portion of this passage, which is included in the Oxford text edited by Minio-Paluello, be deleted from the text. The disputed selection does seem to be repetitive. However, it is also included in many of the manuscript traditions. If the repeated passage is genuine, then it lends further support to my claim that Aristotle is quite deliberate in his problematic claim that everything either inheres in or is said-of primary substances.

by showing that "…the other things are either said-of the primary substances as subjects or are in these as subjects." We can represent Aristotle's claim as follows:

> Direct Subject (DS): For all x, if x is not a primary substance then either x inheres in a primary substance or x is said-of a primary substance.

In the course of trying to establish (DS), Aristotle infers that the universal *color* inheres in some particular body from the fact that it inheres in the universal *body*. However, as we have seen, given the definition of inherence, the universal *color* cannot inhere in any particular body.

What is going on in this passage? While the passage is certainly compressed, I don't think that we can hold, with Ackrill, that Aristotle is simply being careless.[2] He claims three times that everything that is not a primary substance either inheres in or is said-of a primary substance. Furthermore, Aristotle does not make the offending remark in passing but has it as the conclusion of an argument. However, in setting out to demonstrate (DS), Aristotle seems to have set out to show too much. The primacy of primary substance would seem to be adequately secured by the claim that they are ultimate rather than direct subjects for all things. In other words, it seems to be enough for Aristotle's purposes that there is a chain of subject relations beginning from any entity, and ending with primary substances.

> Ultimate Subject (US): For all x, if x is not a primary substance then x either inheres in or is said-of something that either inheres in or is said-of something…that either inheres in or is said-of a primary substance.[3]

In asserting (DS) rather than the weaker (US), Aristotle has committed himself to both of the following claims about one thing's being a subject for another.

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2   See Ackrill (1963), p83.

3   In practice, we need a maximum of two steps to get from any entity to a primary substance. Non-substantial particulars inhere in primary substances. Secondary substances, as well as their superordinate genera, are said-of primary substances. Non-substantial universals are said-of non-substantial particulars, which inhere in primary substances. Furthermore, non-substantial universals inhere in substantial universals, which in turn are said-of primary substances.

(Trans) If x is a subject for y and y is a subject for z, then x is a subject for z.

(Analysis) x is a subject for y if and only if y inheres in x or y is said-of x.

I assume that Aristotle really does want to hold (Trans), since he does think that primary substances are subjects for all things. Therefore, Aristotle's mistake seems to be in holding (Analysis). Some things, e.g. universal non-substances, have primary substances as subjects without either being said-of or inhering in primary substances. Nevertheless, Aristotle does introduce inherence and the said-of relation to give an analysis of the relations between metaphysical predicates and their subjects. While (Analysis) is false, there is a closely related principle which Aristotle takes to be both true and important. Let's say that x is a *direct subject* for y if and only if x is a subject for y, and it is not the case that there is any z such that x is a subject for z and z is a subject for y. Then the following principle holds:

(Analysis*) x is a *direct subject* for y if and only if y inheres in x or y is said-of x.

In holding (Analysis*), however, Aristotle need not be committed to the problematic claim that universal non-substances inhere in primary substances. Furthermore, on the plausible further assumption that *subjecthood* is the ancestral of *direct-subjecthood*, (US) follows from (Analysis*) and the claim that all other things have primary substances as subjects. Perhaps one explanation for Aristotle's going wrong in this passage is that he thinks that he must hold the stronger (Analysis) when he need only hold (Analysis*).

Section 8.3: Aristotle's Argument for (DS)

While Aristotle might be mistaken to hold (DS) and (Analysis), he gives an argument for (DS), and it will be helpful to look at the structure of this argument in some detail. Aristotle gives us an argument from cases. He first sets out to show that anything which is said-of a secondary substance must be said-of a primary substance

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(2a36-b1). Next he sets out to show that anything that inheres in a substance universal must inhere in a primary substance (2b1-3). In taking himself to establish his two sub-claims, Aristotle takes himself to have established (DS) (2b3ff).[4]

In each of the sub-arguments given, Aristotle's reasoning is extremely compressed. At 2a36-38, Aristotle offers the following: "Animal is said of man, therefore of the particular man." I think that it is best to take this sentence as expressing an argument with a suppressed premise.[5]

Argument I:

(I.1) *Animal* is said-of *human*.

(I.2)

∴(I.3) *Animal* is said-of some particular man.

What is missing at (I.2) seems to be a claim to the effect that whatever is said-of *human* must also be said of some particular human, or a more general principle that entails this claim. At 2a38-b1, Aristotle offers support for this missing premise, "For if it were said-of none of the particular men, neither would it be said-of man at all."[6] It is

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4   Technically Aristotle is missing the case of substantial species and non-substantial particulars, but these omissions are understandable given the triviality of the claims that the first is said-of and the second in primary substances. Fully laid out, Aristotle's argument seems to run as follows:
> (1) Everything that is not a primary substance is either a substantial species, is said-of a substantial species, is a non-substantial particular, or inheres in a substance universal.
> (2) Substantial species are said-of primary substance. [Trivial]
> (3) NSPs inhere in primary substances. [Trivial]
> (3) Anything said-of a substantial species is said-of a primary substance. [Argument I below]
> (4) Anything that inheres in a substance universal inheres in a primary substance. [Argument II below].
> ∴(5) Everything that is not a primary substance either inheres in or is said-of a primary substance. [(1)-(4)]

5   The Greek sentence reads as follows: "τὸ ζῷον κατὰ τοῦ ἀνθρώπου κατηγορεῖται, οὐκοῦν καὶ κατὰ τοῦ τινὸς ἀνθρώπου…" I take the use of "οὐκοῦν" to indicate that an inference is being made, although only one premise has been expressed. I take the lines immediately following (2a36-38) as an argument in favor of the suppressed premise.

6   "εἰ γὰρ κατὰ μηδενὸς τῶν τινῶν ἀνθρώπων, οὐδὲ κατὰ ἀνθρώπου ὅλως." In translating this passage, I have followed Ackrill in translating "οὐδὲ...ὅλως" as "neither…at all", taking the use of negation plus 'ὅλως' to be an emphatic negation. However, I think that another more metaphysically loaded reading of the phrase might be possible. We might take 'ὅλως' to mean something like "as a

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natural to ask why Aristotle feels justified in making this assertion. I think that there are two ways that we might take Aristotle's reasoning.

First of all, we might take the argument simply to rely on the transitivity of the said-of relation. If we add as premises two claims that Aristotle commits himself to elsewhere in the *Categories*, we end up with an argument that he would be justified in taking to be sound. First, *human* is said-of every individual human being. Second, the said-of relation is transitive. Therefore, anything that is said-of *human* must be said-of every individual human being. While I think that Aristotle could argue in this way, I do not think that this is, in fact, the argument that he has in mind in this passage. To see why not, we should look at his second argument.

Immediately after offering Argument I, Aristotle offers an argument with the same form to establish that universal non-substances inhere in primary substances. The argument at 2b1-2 runs as follows:

> Argument II:
>
> (I.1) *Color* is in *body*.
>
> (II.2)
>
> ∴ (II.3) *Color* is in some particular body.

Once again, Aristotle needs a premise to the effect that whatever is in the universal *body* is also in some particular body. At 2b2-3 Aristotle continues as follows, "For if it were not in some of the particulars, neither would it be in body at all."[7]

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whole", and to be making even stronger the contrast between something's being said-of a particular and its being said-of a universal. If we look at 2b3, we see that Aristotle is drawing a contrast between something's being "ἐν τινὶ τῶν καθ' ἕκαστα" and its being "ἐν σώματι ὅλως". If we take the use of "ὅλως" as marking that we are talking about body as a whole, i.e. of the universal body, then I think that my case in what follows might be somewhat stronger. Despite my choosing to go with the less tendentious translation, it is clear that Aristotle is drawing a contrast in this passage between universals and particulars.

[7] "εἰ γὰρ μὴ ἐν τινὶ τῶν καθ' ἕκαστα, οὐδὲ ἐν σώματι ὅλως." Once again, I think that Aristotle is making an explicit comparison between something's being in some of the particulars, and something's being in a universal. If it is possible to take 'ἐν σώματι ὅλως' as meaning 'in the universal body,' I would suggest doing so.

Arguments I and II seem to have the same surface form. In each case, we need a premise that lets us move from the claim that something stands in a relation to a universal to the claim that it stands in that same relation to some particulars falling under that universal. This similarity in surface form suggests that Aristotle is suppressing similar premises in each of the arguments. While Aristotle might rely on of the transitivity of the said-of relation along with the fact that *human* is said-of individual human beings in completing Argument I, there is no corresponding principle to do the required work in Argument II. Therefore, I think that Aristotle has something different in mind when he puts forward both Arguments I and II.

In the context of these arguments, Aristotle seems to be assuming that nothing can bear a relation to a universal without bearing that very relation to (at least some of) the particulars constituting that universal. Aristotle's assumption here would seem to be based on a general view about the nature of the relationship between universals and particulars. While it might be overly speculative to do so, I offer the following reconstruction of Aristotle's line of thought in these arguments. *Animal* is said-of the universal *human*. But the universal *human* isn't anything beyond the particular humans. So the only way to stand in a relation to a universal is by standing in a relation to the particulars constituting it. If you don't bear the said-of relation to any of the particulars, then you can't bear it to the universal because the universal isn't some separate entity. So *animal* must be said-of at least some of the individual humans. Similarly, *color* is in *body*. But *body* isn't anything beyond the particular bodies, and you can bear a relation to *body* only by bearing it to the particular bodies. If you don't inhere in any of the particulars, then you can't inhere in the universal.

This line of reasoning is deeply flawed.[8] However, I think that we can understand why Aristotle makes this sort of mistake if we see him as concerned to emphasize the primacy of particulars in the passage that we are currently considering. In attempting to establish that everything in the universe is ultimately dependent on primary substances, Aristotle commits himself to a view on which relations between universals can be completely reduced to relations between particulars.

In the previous chapter, I argued that Aristotle takes universals to be constituted by particulars, without holding that a universal is identical to any extensional construction of these particulars. This view stands as a sort of compromise between a Platonic view on which universals enjoy separate and independent existence, and some kind of class-theoretic or mereological nominalism.[9] Aristotle's anti-platonist tendencies can be summarized by his claim that universals are nothing separate from (*chôriston*) or beyond (*para*) particulars.[10] His antinominalist tendencies can be seen in his refusal to identify universals with any extensional construction of particulars. However, there is a tension in Aristotle's position. The more sharply he emphasizes that universals are *nothing* beyond particulars, the more pressure there is

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[8]   There is one flaw in this reasoning that I will not discuss until later in this chapter. We might note that the reasoning here threatens to commit a fallacy of decomposition. The fact that something stands in a relation to a whole does not generally entail that it stands in that relation to any of the parts of that whole. While this is a fair point about relations in general, there are some relations where such reasoning is not fallacious. Take, for example, the naively conceived relation of physical contact between two objects. I can be in contact with an object only by being in contact with a part of that object. I will argue below that Aristotle takes predication *simpliciter* to be a relation according to which something can be predicated of a universal only by being predicated of an appropriate particular.

[9]   In calling the former view "Platonic", I side with a traditionally dominant line in Plato interpretation according to which forms are both transcendent and separate from, i.e. ontologically independent of, the particulars participating in them. For discussion and criticism of the traditional view, see Gail Fine's "Separation" (1984), "Immanence" (1986), and *On Ideas* (1993) .

[10]   When Aristotle denies that universals are anything separate from (*chôriston*) particulars (see *Metaphysics* H.4), or beyond (*para*) particulars (see *Posterior Analytics* I.24), he takes himself to be opposing Plato. On the question of whether Aristotle is right in taking Plato as holding that universals are something *para* particulars and the question of what Plato might mean in claiming that forms are something *para* particulars, see Fine (1984), and Morrison "*Choristos* in Aristotle" (1985a), "Separation in Aristotle's *Metaphysics*" (1985b), 'Separation: A Reply to Fine' (1985c). Also see Fine "Separation: A Reply to Morrison" (1985).

on him to *identify* universals with collections of particulars.[11] Perhaps one way to read 2a34ff is as a case where Aristotle's antiplatonist commitments lead him too far in the direction of nominalism. Aristotle's claim that *color* is in a particular body will be false on the picture of universals that I offered in Chapter 7. However, as I have argued previously, Aristotle's claim at 2a34ff will be true if he takes universals to be sets or sums of the particulars that they are said-of.[12] *Color* is in *body*, but *color* just is the sum of the particular colors, and *body* is just the sum of the particular bodies. *Color* will then count as inhering in each particular colored body according to Aristotle's definition of inherence. *Color* is in the particular body in the non-technical sense of 'in', and, if mereological sums have their parts essentially, then *color* cannot exist without the particular color inherent in that particular body. However, no particular color can exist apart from the particular body in which it inheres. So, the universal *color* cannot exist without each of the particular bodies in which NSP colors inhere. While I take there to be ample evidence that Aristotle does not want to accept the identification of universals with sums of particulars, his reasoning at 2a34ff makes sense if he does accept such an identification. Perhaps Aristotle's problematic assertions at 2a34 show him to be temporarily in the grips of an extreme form of nominalism.

Section 8.4: A Third Possible Source of Confusion

I have suggested two possible sources of confusion that might underlie Aristotle's assertion that all things other than primary substances either inhere in or are

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[11]   As I allude to in Chapter 7, there may be an even stronger reading of the "nothing beyond particulars" view, on which universals stand in a relation of plural identity to some particulars. The universal *human* just is the humans, and commitment to the universal involves *no* ontological commitment beyond commitment to the particulars. I think that this view is both philosophically problematic, and hard to attribute to Aristotle. However, if Aristotle is thinking that universals *just are* particulars then the inherence of *color* in *body* just is the inherence of body in the particulars, and Aristotle's claim at 2b2 follows immediately.

[12]   See chapter 3.

said-of primary substances, and particularly his assertion that non-substantial universals inhere in particular substances. In the remainder of this chapter, I want to examine Aristotle's theory of predication in the *De Interpretatione* and the *Analytics*. In the *De Interpretatione* and *Prior Analytics*, Aristotle suggests a view on which universals inherit the predicates of the particulars that they are said-of, and on which something can be predicated of a universal only if it is predicated of appropriate particulars. What Aristotle says about inherence at 2b1-3, therefore, seems to be something that he affirms about predication as least as he conceives of it in the *Prior Analytics* and *De Interpretatione*. Furthermore, on the view of predication that Aristotle puts forward in those works, call it predication *simpliciter*, we seem to be able to give necessary and sufficient conditions for properly predicating something of a universal subject solely in terms of what is properly predicated of the particulars that the universal is said-of.[13] Whether we can go further and claim that Aristotle thinks that predicating something of a universal *reduces* to predicating something of the right sorts of particulars is a difficult question, but much of what Aristotle says in these works is consistent with the reductive view.

In his discussion of *katholou* and *kath' hauto* predication in the *Posterior Analytics*, however, Aristotle denies that everything that can be predicated *kath' hauto* of a universal can also be predicated *kath' hauto* of particular instances of the universal. Furthermore, *kath' hauto* predication of a universal cannot be reduced to

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[13]   In what follows, unless I explicitly qualify an occurrence of 'predication' as '*kath' hauto*', I am talking about predication *simpliciter*. However, predication *simpliciter* admits of qualification. As we will see, Aristotle thinks that something can be predicated *simpliciter* of a universal or of a particular. Furthermore, in the *De Interpretatione*, when something is predicated *simpliciter* of a universal, it can be predicated of that universal either universally (*katholou*) or non-universally. Furthermore, in the *Prior Analytics,* Aristotle draws a strong equivalence between predicating something universally (*katholou*) and predicating it of every instance of a universal (*kata pantos*). However, in the *Posterior Analytics*, Aristotle distinguishes *katholou* predication from *kata pantos* predication, and claims that something can be predicated of something *katholou* only if it is also predicated of that thing *kath' hauto*. This change in Aristotle's use of the term '*katholou*' greatly complicates the exposition of his view.

predicating something *simpliciter* of a universal or to predicating something *simpliciter* of particulars. On closer examination of Aristotle's different sorts of predication, we see that the relation of inherence is more akin to *kath' hauto* predication than to the more purely extensional predication *simpliciter* discussed in the *Prior Analytics* and *De Interpretatione*. We might attribute Aristotle's mistake at 2a34ff to his thinking about inherence in terms of predication *simpliciter* rather than in terms of *kath' hauto* predication.

The distinction between predication *simpliciter* and predication *kath' hauto* is also closely related to the distinction between a purely extensional view of universals and a view according to which universals are something other than extensions of particulars. Furthermore, the conflation of *kath' hauto* predication and predication *simpliciter* is closely related to a mistake about the way in which constitution interacts with modality.

Section 8.5: Predication in the De Interpretatione

In chapter 7 of the *De Interpretatione*, Aristotle distinguishes between stating something of a particular, and stating something of a universal. In cases where we state something of a universal, we can do so either universally or non-universally. We therefore have three types of statement, and it might be helpful to look at examples of each type.

Stating something of a particular:

(P1)	ἔστι Σωκράτης λευκός.	(Socrates is pale.)
	Esti Sôkratês leukos.	
(P2)	οὐκ ἔστι Σωκράτης λευκός.	(Socrates is not pale.)
	Ouk esti Sôkratês leukos.	

Stating something of a universal universally:

(UU1)	πᾶς ἄνθρωπος λευκός [ἔστι].	(All/every man is pale.)
	Pas anthrôpos leukos [esti].	

(UU2)	οὐδεὶς ἄνθρωπος λευκός [ἔστι].	(No man is pale.)
	Oudeis anthrôpos leukos [esti].	

Stating something of a universal non-universally:

(UN1)	ἔστι λευκός ἄνθρωπος.	([A] man is pale.)
	Esti leukos anthrôpos.	

(UN2)	οὐκ ἔστι λευκός ἄνθρωπος.	([A] man is not pale.)
	Ouk esti leukos anthrôpos.	

(P1) and (P2) are pretty straightforward—we are affirming or denying something of the particular Socrates. In both of the other pairs of statements, Aristotle holds that the statement is about the universal *human*. In (UU1) and (UU2), Aristotle claims that we are stating something of *human* universally. In (UN1) and (UN2), he tells us that the subject is still the universal, but that we are stating something about that subject non-universally.[14]

The most straightforward way of rendering (UU1)-(UN2) into colloquial English and first-order logic would be as follows:[15]

(UU1_e) Every man is pale.
(UU2_e) No man is pale.
(UN1_e) A man is pale.
(UN2_e) A man is not pale.

(UU1_fo) $\forall x(Mx \supset Px)$
(UU2_fo) $\neg \exists x(Mx \ \& \ Px)$

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[14]   Aristotle uses the phrase "ἐπὶ τοῦ καθόλου ἀποφαίνεσθαι καθόλου" to indicate that the subject is a universal and that it is being taken universally, and "μὴ καθόλου ἀποφαίνεσθαι ἐπὶ τῶν καθόλου" to indicate that we are stating something of the subject non-universally. In the sentence "πᾶς ἄνθρωπος λευκός [ἔστι]," Aristotle tells us that 'ἄνθρωπος' signifies a universal, and that the function of 'πᾶς' is to indicate that we are stating something of *Human* universally. In "ἔστι λευκός ἄνθρωπος" the use of 'ἄνθρωπος' still indicates that the subject is the universal *human*. However, the lack of 'πᾶς' indicates that we are stating something of *human* non-universally.

[15]   Ackrill (1963), and Irwin and Fine (1995) translate the relevant sentences in the way that follows. It isn't clear whether they are wed to the first-order versions of these sentences that I give. Edgehill (1928) renders (UU1) as (UU1_e) but chooses "Man is pale" as a translation of (UN1). One possible alternative would be to take 'πᾶς' plus the grammatically singular 'ἄνθρωπος' as 'the whole man'. See the entry on 'πᾶς' in LSJ. (UU1) then says that the whole universal *human* is pale. I am hesitant to put too much weight on this suggestion, because the standard translation does strike me as more natural. Nevertheless, it is interesting that 'πᾶς' exhibits this subtle ambiguity.

$$(UN1_{fo}) \; \exists x(Mx \; \& \; Px)$$
$$(UN2_{fo}) \; \exists x(Mx \; \& \; \neg Px)$$

$(UU1_e)$-$(UN2_e)$ represent a natural way to take the corresponding Greek sentences. However, this way of rendering Aristotle's Greek can be misleading, if $(UU1_e)$-$(UN2_e)$ are taken to be equivalent to $(UU1_{fo})$-$(UN2_{fo})$.

Aristotle takes (UU1), like (P1), to be sentence consisting of a subject and a predicate joined by a copula. In (UU1) the subject is the universal *human*. However, the corresponding first-order sentence $(UU1_{fo})$ does not have the universal as a subject. It is, in fact, difficult to say what counts as the subject of $(UU1_{fo})$, since it doesn't even have the *subject-copula-predicate* form. Rather, $(UU1_{fo})$ tells us that every entity in the universe meets one of two conditions, either it is something other than a human being or it is pale. $(UU1_{fo})$ seems to be about the particulars in the universe and the function of the quantifier is to indicate that we are talking about every particular. Aristotle, however, takes (UU1) to be about *human*, and the function of the term '*pas*' seems to be to indicate how much of the subject the predicate belongs to, or to what extent the predicate belongs to the subject. *Pallor* is being said to belong to all of *human*.[16] To see whether this difference between (UU1) and $(UU1_{fo})$ amounts to anything, it will be helpful to examine some of Aristotle's statements about *katholou* predication in the *Prior Analytics*.

First, however, I want to take a look at (UN1)-(UN2) and the English and first-order translations given for them above. Greek has no indefinite article, but it is often natural to translate uses of a noun with no article by using the indefinite article in the translation. So $(UN1_e)$ and $(UN2_e)$ are perfectly natural English translations of Aristotle's Greek. However, Aristotle explicitly tells us that the subject of (UN1) and

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[16] Notice, that on this way of construing universal statements, the Aristotelian treatment of sentences containing empty general terms is well motivated. Take the sentence "Every unicorn is magical." When I claim that everything in the universe either fails to be a unicorn or is magical, I say something true. However, when I say that *magicality* belongs to the entirety of the entity *unicorn*, which contains all the currently existing unicorns as parts, it is reasonable to hold that I say something false.

(UN2) is the universal *human*, and it is difficult to see how the subject of the English sentence, "A man is pale", can be thought to be a universal.

Furthermore, Aristotle tells us that (UN1) and (UN2) are contradictory opposites, and that contradictory opposites must affirm and deny the same thing of the same thing. Thus, Aristotle must take '*anthrôpos*' in (UN1) and (UN2) to be a univocal referring expression—it refers to the universal *human* in both sentences. These sentences are genuinely contradictory for Aristotle, one affirms and the other denies something of a single universal subject. In fact, Aristotle seems to take the fact that both these sentences can be true to represent an exception to the Principle of Non-Contradiction.[17]

(UN1$_e$) and (UN2$_e$), however, do not seem to be contradictory opposites. The phrase 'a man', as it occurs in the English sentences, is not functioning as a univocal referential expression at all. It also seems obvious that (UN1$_{fo}$) and (UN2$_{fo}$) do not affirm and deny the same thing of the same thing. (UN1$_{fo}$) tells us that something is both a man and a pale thing, and (UN2$_{fo}$) tells us that something is a man and is not a pale thing. While Aristotle does take (UN1) and (UN2) to be contradictory, there is little temptation to take (UN1$_e$) and (UN2$_e$) or (UN1$_{fo}$) and (UN2$_{fo}$) as genuinely contradictory. There is some reason, therefore, to resist taking (UN1) and (UN2) to have the same meaning as (UN1$_{fo}$) and (UN2$_{fo}$).

In addition, Aristotle gives us another sentence that seems to have a better claim on being the Greek way of rendering (UN1$_{fo}$). In giving the contradictory opposite of 'No man is pale,' ('*Oudeis anthrôpos leukos [esti].*'), Aristotle provides 'Some man is pale.' ('*Tis anthrôpos leukos [esti].*'). In the latter sentence, Aristotle explicitly uses the indefinite pronoun '*tis*' (some). Furthermore, while the

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[17] For more on the discussion of universal predication and the principle of non-contradiction, see Whitaker *Aristotle's De Interpretatione: Contradiction and Dialectic* (1996). My general take on this passage owes a lot to Whittaker's discussion.

contradictory of 'All man is pale,' is said at *De Interpretatione* 7 to be 'Not all man is pale,' ('*Ou pas anthrôpos leukos,*'), Aristotle generally also takes the particular negative sentence, 'Some man is not pale,' ('*Ou leukos tis anthrôpos [esti].*') to be the contradictory opposite of a universal affirmative.[18] Therefore, it seems that $(UN1_{fo})$ and $(UN2_{fo})$ would be better taken as translations of sentences in which Aristotle explicitly uses a form of the indefinite pronoun.

(UP1) Some man is pale.   (τὶς ἄνθρωπος λευκός [ἔστι].)

(UP2) Some man is not pale.   (οὐ λευκός τὶς ἄνθρωπος.)[19]

Although (UN1) and (UN2) differ syntactically from (UP1) and (UP2), we might, nevertheless, take the relevant pairs of sentences to be semantically equivalent, in the way that we normally take the English sentences 'A man is pale,' and 'Some man is pale,' to be equivalent. At least in the *De Interpretatione*, however, Aristotle does not take '*tis anthrôpos leukos esti,*' to mean the same thing as '*esti leukos anthrôpos.*' Aristotle insists at 17a37 that every sentence has exactly one contradictory opposite. (UN1) has (UN2) as its contradictory opposite. The contradictory opposite of (UP1) is (UU2) ('No man is pale'). Aristotle explicitly denies that 'Man is not pale,' has the same meaning as 'No man is pale.' Therefore, on the assumption that semantically equivalent statements have semantically equivalent contradictories, Aristotle doesn't take (UN1) and (UP1) to be semantically equivalent.[20] We have

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[18]   Aristotle does not give an example of a particular negative using '*tis*' in the *De Interpretatione*. However, see *APr* I.2 25a22-25: "τὸ ἄνθρωπος τινὶ τῷ ζῴῳ μὴ ὑπάρχει." (Man doesn't belong to some animal.) is given as meaning the same thing as "τὸ ἄνθρωπος οὐ παντὶ ζῴῳ [ὑπάρχει]." (Man does not belong to every animal.)

[19]   Aristotle never tells us whether (UP1) and (UP2) should be taken as claims about universals or about particulars. If we do think that (UP1) is equivalent to $(UN1_{fo})$, then it seems that (UP1) doesn't really have a universal subject. However, in the *Prior Analytics*, Aristotle claims that in statements like (UP1) and (UP2) we affirm or deny something of something 'in part' (*en merei*). He might then take the subjects of such sentences to be universals, and hold that we are stating something about the universal in a certain way, *partially*. On this suggestion, we are taking '*tis*' to have adverbial force. Nevertheless, '*tis*' seems to function grammatically as a modifier of '*anthrôpos*'.

[20]   For a similar argument, see Whitaker (1996) chapter 7.

reason, therefore, to deny that the first-order sentences offered as translations above accurately capture what Aristotle is talking about in the *De Interpretatione*. The story might be somewhat different, however, when we turn to the *Prior Analytics*.

Section 7.6: Predication in the Prior Analytics

In *Prior Analytics* I.1 and I.2, Aristotle talks about three ways in which one thing can be stated of another: universally (*katholou*), partially (*en merei*), or indefinitely (*adioristos*). In each of these cases, Aristotle is considering sentences in which the subject term is a universal, and he doesn't deal with assertions about particulars like (P1)-(P2) in *Prior Analytics* I.1-2.[21] The sentences that Aristotle typically uses in the *Prior Analytics* have a different grammatical form than the example sentences in the *De Interpretatione* that we looked at above.

Universal (*katholou*)	Pale belongs to all human. Pale belongs to no human.
Partial (*en merei*)	Pale belongs to some human. Pale does not belong to some human
Indefinite (*adioristos*)	Pale belongs to human. Pale does not belong to human.[22]

There is a strong temptation to take the universal sentences to correspond to (UU1)-(UU2), the indefinite sentences to correspond to (UN1)-(UN2), and the partial sentences to correspond to (UP1)-(UP2). If we do so, however, then the *Prior Analytics* seems to conflict with the *De Interpretatione*.

In *Prior Analytics* Book I chapter 7, Aristotle claims that substituting a positive indefinite premise for a positive particular (*en merei*) premise in any

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[21]   Aristotle does talk a bit about predicating things of sensible particulars later in the *Prior Analytics*.

[22]   Compare these three sentences to "All man is pale," "Some man is pale," and "Man is pale." Generally if we have a sentence of the form *"Quantifier-word subject **is** predicate,"* the corresponding sentence in the *Analytics* typically has the form *"Predicate **belongs to** quantifier-word subject."* 'Belongs to' translates the verb '*huparchein*' which takes a dative complement.

syllogism will not change the deduction being made.[23] As an example, take the following valid syllogism:

(S1)   Rational belongs to all man.

(S2)   Pale belongs to some man.

∴(S3)   Rational belongs to some pale.

In (S2), we have a partial assertion formally equivalent to (UP1) above. Aristotle tells us that we can freely substitute the indefinite assertion (S2*) to get the following valid syllogism:

(S1)   Rational belongs to all man.

(S2*)   Pale belongs to man.

∴(S3)   Rational belongs to some pale.

(S2*) is formally equivalent to (UN1). Furthermore, while Aristotle doesn't explicitly tell us that the converse holds in all cases, it seems that he would also hold that the substitution of (S2) for (S2*) in any syllogism preserves validity. Let's call sentences that can be substituted for each other in any syllogistic context in a way that preserves validity "syllogistically equivalent". We are left with the question of whether Aristotle takes all syllogistically equivalent pairs of sentences to have the same meaning. According to Ackrill, Aristotle's claims in the *Prior Analytics* indicate that he eventually came to identify indefinite and partial statements and to hold that the former are disposable.[24] Whitaker, on the other hand, argues that the mere syllogistic

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23   See 29a27.

24   See Ackrill (1963). Ackrill holds that the view in the *Prior Analytics* represents a development and correction of the view in the *De Interpretatione*, and seems committed to the claim that the former is a later work. While I have an intuition that Ackrill is right on this score, I have little confidence in my intuitions about the relative chronology of Aristotle's works. For my purposes in this chapter, the differences between the *Prior Analytics* and the *De Interpretatione* are less important than the similarity of these works when compared to the *Posterior Analytics*. Given the fact that Aristotle seems to refer to and presuppose the *Prior Analytics* in the *Posterior Analytics*, there is some reason to think that the latter is a later work. However, it is possible that Aristotle continually updated both works through the course of his career, which would complicate any claims about relative dates considerably.

equivalence is not enough to argue for sameness of meaning. According to Whitaker, Aristotle takes indefinite statements have no special role in deductive logic and to be eliminable in that context, but he takes indefinite statements to be essential and ineliminable in dialectical arguments.[25]

I think that Whittaker is right to distinguish syllogistic equivalence from full-blown semantic equivalence. Two sentences could entail each other, and behave the same way in syllogisms without meaning exactly the same thing. Figuring out what Aristotle means in claiming that partial and indefinite assertions are syllogistically equivalent in the *Prior Analytics* depends crucially on how we construe partial assertions.

Section 8.7: Two Interpretations of Partial Assertion

There are two different ways in which we might think about partial assertions and it is not entirely clear which Aristotle intends. It will be helpful to formalize the alternatives. Let 'Cxy' mean 'y belongs to x,' and let 'x' and 'y' range over both particulars and universals.[26] Let '*P*' be one-place operator representing an adverbial modifier such that '*P*Cxy' means: y partially belongs to x. Let *h* be the universal *human*, and *r* be the universal rational. The indefinite assertion, "Rational belongs to human," would be represented as[27]:

(IA)   C*hr*

Here are two possible ways of representing the partial assertion, "Rational belongs to some human."

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25   Whitaker (1996).
26   The idea here is that both universals and particulars can be referents of first-order terms. Ordinary first-order logic would have a predicate ('M'=is a man) and represent the sentence "Socrates is a man," as 'Ms'. The system under consideration has an individual constant for the universal *man* ('*m*'), and a first-order relation corresponding to Aristotle's copula ('C_ _'). This system then represents "Socrates is a man," as 'Cs*m*'.
27   I choose (IA) as the proper way to represent an indefinite assertion on the ground that it better captures Aristotle's claim that the subject of the sentence is a universal.

(PA1) $\exists x(Cxh \ \& \ Cxr)$

(PA2) $\boldsymbol{PChr}$

If we want to translate sentences like (UP1) into first-order sentences like (UN1$_{fo}$),
then (PA1) seems to be the proper way to take partial assertions. On the other hand, if
partial claims are taken to be claims with universal subjects, then (PA2) seems to be a
better choice. The issue here is complicated by the fact that Aristotle sometimes talks
about partial assertions in a way that naturally inclines us to (PA1), and sometimes in
a way that inclines us to (PA2). Aristotle describes partial assertions as cases where
one thing is said to belong to another 'in part', where 'in part' seems to function as an
adverbial modifier of 'belong to', in which case (PA2) is a more natural way to go.
However, in his examples of partial assertions Aristotle generally uses a form of
'*tis/ti*' to modify the subject of the assertion. So a standard example might be
"Rational belongs to *tis* human." This sentence would best be translated as "Rational
belongs to some human," which seems akin to (PA1), rather than as "P partially
belongs to S," which seems akin to (PA2).[28] The way that we construe partial
assertions will influence our interpretation of syllogistic equivalence.

Indefinite assertions are best construed as (IA), and tell us that one universal
belongs to another without specifying how (i.e. wholly or partially) the first belongs to
the second. If Aristotle is taking partial assertions as (PA2), then we have a case where
a sentence with an explicit adverbial modifier is said to be equivalent to a sentence
with no adverbial modifier. Assume that there are only two sorts of adverbial
modifiers that are proper in these sorts of cases, 'partially' and 'wholly', and that
every case in which one thing belongs to another is either a case where it belongs to it

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[28]   It might be possible for Aristotle to use a form of *tis/ti* as an adverbial modifier, and express
something like (PA2). However, he would need to use a neuter form ('*ti*') to be justified in taking '*tis/ti*'
adverbially. Aristotle invariably uses a form of '*tis/ti*' that agrees with the subject, indicating that he
isn't using the term adverbially.

partially or where it belongs to it wholly. Any case in which (PA2) is true, is then a case in which (IA) is also true. Make the further assumption that whenever one thing wholly belongs to another, the first also belongs to the second in part. Then any case in which (IA) is true is also a case in which (PA2) is true.[29] If (PA2) is the correct way to take partial assertions, then partial assertions will be syllogistically equivalent to (IA). Furthermore, I would be tempted to say that (PA2) and (IA) are semantically equivalent.[30]

The situation is a bit more complicated if we construe partial assertions as (PA1). (IA) is a sentence that has a universal as its subject. (PA1) doesn't have a subject, strictly speaking. If the semantic equivalence of two sentences is a matter of their meaning the very same thing, then a sentence that has a subject can be semantically equivalent to another sentence only if the second has the same subject as the first. We would then deny that (IA) is semantically equivalent to (PA1), since the first sentence is about a universal while the second is equivalent to the claim the conjunction of two sentences with the same particular subject is true.[31]

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[29] The fact that Aristotle's syllogistic logic takes A-claims to entail the corresponding I-claims makes this assumption plausible. The adverbial modifier 'partially' seems best taken to mean something like 'at least in part' rather than as 'partially but not wholly'.

[30] We have a case here where partially belonging to something constitutes the minimal threshold for belonging to something at all. Whether the equivalence of (PA2) and (IA) is a formal equivalence will depend on whether we take 'P' and 'C' to be a logical constants or not. If it is a logical constant, it is reasonable to think that $\ulcorner PC\alpha\beta \equiv C\alpha\beta \urcorner$ will be a logically valid schema. If 'P' is not a logical constant, then the equivalence of (PA2) and (IA) will depend on the intended interpretation of 'P' and 'C', which will in turn depend on substantive views about what it is for something to belong to a universal.

[31] It is difficult to figure out exactly how exactly to reconcile the choice of (PA1) as the correct way to take partial assertions with Aristotle's general thought that sentences have logical subjects. It is unclear that Aristotle ever directly conceives of anything like a contemporary treatment of existential quantification involving objectual satisfaction. (Note, however, that sometimes takes universally predicating something of a universal as equivalent to saying that everything to which one predicate belongs is something to which the other predicate belongs. This way of taking universal statements is very close to the way that they are taken by a theory with objectual quantification. See note 37.) The issues that I am examining at present, therefore, might involve going well beyond Aristotle's own formal resources.

Nevertheless, the questions raised seem essential to understanding fully Aristotle's theory of predication. Perhaps the best way to take (PA1) is as a claim involving substitutional quantification—as

Section 8.8: Predicational Inheritance and Partial and Indefinite Statements

I am uncertain whether Aristotle would be more inclined to accept (PA1) or (PA2) as closest to his way of understanding partial assertions. However, I think that we can raise a more fundamental question. If presented with (PA1) and (PA2), what would Aristotle say about each of these sentences? In the first we have a statement that there are some particulars to which certain predicates belong, while in the second we are told that a predicate partially belongs to a universal. Understood in this way, would Aristotle take (PA1) and (PA2) have the same meaning? Or to put the question in the material mode, would Aristotle take these sentences to report the very same underlying fact? At the very least, I think that Aristotle would hold that as a matter of necessity each sentence is true if and only if the other sentence is true.[32] A sentence partially (or indefinitely) predicating something of a universal will be true if and only if there is a true sentence predicating it of some appropriate particular. Aristotle, therefore, accepts the following principles of predicational inheritance.

> (PI1) For all universals, x, and all predicates, y, y is partially predicated of x if and only if there is some particular z such that x is said-of z and y is predicated of x.

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elliptically claiming that there is at least one true sentence claiming that rational belongs to a particular human. Alternatively, we might take (PA1) as expressing elliptically some disjunction of sentences with particular subjects. In part because neither of these alternatives seems particularly attractive, I have some hesitation about whether or not (PA1) can be the right way to take partial assertions. I don't think that I can solve this problem in the present work, however. So I am content to outline some alternatives here. See note 37 for additional discussion of what it means to reduce claims about universals to quantificational claims and claims about particulars.

[32]   There is good reason to think that Aristotle will distinguish sameness of meaning from mere intensional equivalence, where this is taken as sameness of truth-value in all possible worlds. For example, while Aristotle would take "human" to mean the same thing as "rational animal", he would not take "human" to mean the same thing as "grammatical animal". However, the sentence "Human beings are rational," is true in all and only those worlds in which "Human beings are grammatical," is true. These sentences are intensionally equivalent, but differ in meaning.

(PI2) For all particulars, x, and all predicates, y, y is predicated of x if and only if there is a universal, z, such that z is said-of x and y is partially predicated of z.[33]

Aristotle will also hold principles corresponding to (PI1) and (PI2) without the qualification, 'partially'. Something's being predicated of a universal will also require its being predicated of at least one appropriate particular, and anything predicated of a particular will be predicated of all the universals said-of that particular. A closer examination of Aristotle's claims about universally predicating something of a universal reveals some further facts about the relation between particular and universal predication.

Section 8.9: Universal Predication in the Prior Analytics

At the outset of the *Prior Analytics*, Aristotle distinguishes various types of proposition:

> A proposition is a statement affirming or denying (something) of something, and this either universal, partial or indefinite. By universal I mean what belongs to all or to none, by partial what belongs to some or not to some or not to all, by indefinite what belongs or does not belong without (an indication) of universal or partial…[34] (24a16-20)

Aristotle tells us here that one thing is predicated of another *katholou* whenever the first belongs to all or to none of the second. At the end of *APr* I.1, Aristotle gives a further explanation of what it is for one thing to be 'in another as a whole'.

> For one thing to be in another as a whole is the same as for the second to be predicated of all of the first. And we say that something is

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[33]   We could do away with (PI2) if we assume that all particulars have some universal said-of them.

[34]   "Πρότασις μὲν οὖν ἐστὶ λόγος καταφατικὸς ἢ ἀποφατικός τινος κατά τινος· οὗτος δὲ ἢ καθόλου ἢ ἐν μέρει ἢ ἀδιόριστος. λέγω δὲ καθόλου μὲν τὸ παντὶ ἢ μηδενὶ ὑπάρχειν, ἐν μέρει δὲ τὸ τινὶ ἢ μὴ τινὶ ἢ μὴ παντὶ ὑπάρχειν, ἀδιόριστον δὲ τὸ ὑπάρχειν ἢ μὴ ὑπάρχειν ἄνευ τοῦ καθόλου ἢ κατὰ μέρος…" (24a16-20)

predicated of all of something whenever nothing [of the second] can be found which is such that the first can't be asserted of it (24b26-30).[35]

Aristotle's discussion at 24b26-30 picks up his discussion of predicating something of something universally (*katholou*) at 24a18. Being in something as a whole is the converse of being affirmed or denied of something as a whole. Aristotle's discussion of being in something as a whole calls to mind the use of Euler circles in modeling syllogistic logic. The circle representing the term A is *wholly inside* the circle representing term B when B belongs to all A, and is *wholly outside* the B-circle when B belongs to no A.

In telling us that one thing belongs to all of another whenever nothing of the second can be found such that the first fails to be asserted of it, I take Aristotle to be making a claim about particulars. *A* is in *B* as a whole if and only if *B* is predicated of all *A*, and *B* is predicated of all *A* if and only if there is no particular to which *A* belongs and *B* fails to belong.[36]

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[35] "Τὸ δὲ ἐν ὅλῳ εἶναι ἕτερον ἑτέρῳ καὶ τὸ κατὰ παντὸς κατηγορεῖσθαι θατέρου θάτερον ταὐτόν ἐστιν. λέγομεν δὲ τὸ κατὰ παντὸς κατηγορεῖσθαι ὅταν μηδὲν ᾖ λαβεῖν [τοῦ ὑποκειμένου] καθ' οὗ θάτερον οὐ λεχθήσεται." (24b26-30).

I follow Ross's suggestion is *Aristotle's Prior and Posterior Analytics* (1949), p292, in taking the passage to say that one thing is in another as a whole only when the second is predicated of all of the first. The use of '*en holô*' in this passage, therefore, isn't exactly coordinate with the use of '*en merei*' in the discussion of being predicated in part at 24a18.

[36] I suggest that we take "…μηδὲν ᾖ λαβεῖν [τοῦ ὑποκειμένου] καθ' οὗ θάτερον οὐ λεχθήσεται," as meaning "…nothing [of the subject] is to be found of which the other is not asserted," where this is seen as a claim quantifying over particulars rather than as a claim about a universal.

I agree with Ross (1949) that 'τοῦ ὑποκειμένου' most likely represents a gloss by Alexander and should be omitted. It might be somewhat more natural to take the 'μηδὲν' in the way that I suggest with this omission, although it still strikes me as possible to take "μηδὲν τοῦ ὑποκειμένου" as something like "no example of the subject". I am intrigued by an alternative reading from *Urbinus* manuscript recorded in Ross (1949), "μηδὲν ᾖ λαβεῖν τῶν τοῦ ὑποκειμένου…" The use of the plural 'τῶν' in 'μηδὲν τῶν' suggests '*not one* of many (particulars)…'. However, the fact that we get no noun for the article 'τῶν' to modify presents a serious grammatical obstacle to accepting this reading. What is at issue here is whether Aristotle conceives of κατὰ παντὸς predication as involving quantification over particulars or rather takes 'κατὰ παντὸς' to modify the way in which a predicate belongs to a universal subject. A third possibility is that Aristotle equates these ways of looking at κατὰ παντὸς predication.

At the very least then, Aristotle holds that (UU1) and (UU1$_{fo}$) are true in all the same possible worlds. So, the following predicational inheritance principle also holds.

(PI3) For all universals, x, and all predicates, y, y is universally predicated of x if and only if for every particular, z, such that x is said-of z, y is predicated of z.

Whether Aristotle goes further in the *De Interpretatione* and *Prior Analytics,* to identify universally predicating something of a universal with predicating it of every appropriate particular, is a difficult issue to resolve. We face the same issues that we faced in the case of indefinite and partial predication. On the one hand, in universally predicating something of a universal we say something about a universal subject, while in saying that something is predicated of all of a collection of particulars we seem to say something about many particulars.[37] On the other hand, we might think

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[37]   We should be careful here to distinguish two different views. On one view, a universal claim is intensionally equivalent to a specific conjunction of particular claims. On the second view, the universal claim is intensionally equivalent only to a quantificational claim. Say that in the actual world, a and b are the only particular *A*s. On the first view, (i) "*B* belongs universally to *A*," is intensionally equivalent to (ii) "*B* belongs to a & *B* belongs to b.' This first view seems incorrect since we intuitively think that the truth-values of the two sentences could diverge. On the second (and more plausible) view, (i) is intensionally equivalent to (iii) "Each particular thing that is an *A* is also a *B*." The truthmaker for (iii) will involve different entities in different worlds.

Here is a difficult question: what is the relation between the actual world truthmaker for (ii) and that of (iii)? We might think that the truthmaker of (ii) consists solely in the truthmakers of each of its conjuncts. But we could have a world in which each conjunct of (ii) was true, but in which (iii) was false. So what else is involved in the truth of (iii)? On one possible account, the truthmaker for (iii) would be a relation between the universals *A* and *B*. If we account for the truth of (iii) in this way, then I think that we have a non-reductive view even if we claim that (i) and (iii) have the same meaning.

On another account, we do not need to include relations between universals among the fundamental facts constituting our truthmakers, but we do need to add something to the truthmaker for (ii). We might have some sort of 'totality fact', which makes true the claim that *A* belongs to nothing other than a and b. The idea here is that we will have the fact that a is *A* and the fact that b is *A*, as well as the fact that there are no other *A*-facts. The truthmaker for (iii) in any world will be of the form: x_1 is *A* &...& x_n is *A* & that's all the *A*-facts & x_1 is *B*&…&x_n is *B*. Alternatively, we might have all the atomic facts plus the fact that these are all the facts, *a la* Wittgenstein. First, we have the conjunction of all the particular atomic facts along with the fact that these are all the facts (a global totality fact). The truth maker for a particular assertion will be an atomic fact. The truthmaker for a particular negation will be the fact that no truthmaker for the corresponding assertion is included in the totality of atomic facts. The truthmaker for a universal claim like "All *A*s are *B*s," will be the fact that every object in the universe is either a thing that is an element of an atomic *A*-fact, or it is not one of the things that is an element of an atomic *B*-fact.

that Aristotle intends something very strong when he claims at 24b26-30 that *A's* being in *B* as a whole is the same as there being no particular *A* of which *B* fails to be predicated. If he means that these two claims are alternative ways of stating a single fact, then he would seem to have the stronger reductive view in mind.

Section 8.10: Predicational Inheritance and Particulars as Parts of Universals

Aristotle's accepting (PI1)-(PI3) goes along with the view that universals are wholes with particulars as parts. His thinking seems to be analogous to the line of thought in the following case. Think of a chessboard with black and white squares. We would accept that the board is partially white and that it is partially black. In some contexts we would accept the claim that the board is white, even without the qualification 'partially'.[38]

Calling the chessboard white without qualification is akin to non-universally predicating something of a universal. Notice that, in the same contexts, we would be equally willing to call the chessboard black. In the analogous case about non-universally predicating something of a universal in the *De Interpretatione*, Aristotle claims that we accept contradictory statements. He gives the following argument, "Man is noble and man is not noble (for if base then not noble…)." As I have already argued, Aristotle is talking about predicating something of a universal in this passage. He claims that *nobility* and its opposite *baseness* can both be predicated of the

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Armstrong, *A World of States of Affairs* (1997) and *Truth and Truthmakers* (2004), discusses and advocates the use of totality facts in specifying truthmakers for negative and universal claims. If we give an account of the truthmaker for (iii) in the second way, and hold that (i) and (iii) have the same meaning, then we will have a reductive view. However, the view will be considerable weaker than a view on which (i) has the same meaning as (ii). If we give the second account of the truthmaker of (iii) but claim that the truthmaker for (i) involves an additional relation between universals, then we will have a non-reductive view.

[38]   In many ordinary cases, the claim that something has a certain color seems naturally taken as a claim that it is solely (or at least predominantly) that color. However, in other cases, from the claim that the chessboard is both white and black, I would be inclined to infer both that it is white and that it is black. However, in such cases, I would not take the claim that something is black to entail that it is wholly or predominantly black.

universal *human*. From the fact that *baseness* can be predicated of *human*, and the fact that whatever is base is not noble, Aristotle concludes, "Man is not noble." Furthermore, he claims that "Man is not noble," is the contradictory opposite of "Man is noble." The problem with Aristotle's argument becomes clear if we think about the analogous argument in the chessboard example.

Chessboard Argument (CBA):

(i)   The chessboard is white.
(ii)   The chessboard is black.
(iii)   Whatever is black is not white.
∴(iv) The chessboard is not white.

There are two ways to think about what is going wrong with (CBA). First, we might claim that the claim that the chessboard has a color is really just shorthand for the claim that some part of the chessboard has that color. Of course from the fact that one part is white while another part is black, it does not follow that we have anything that is both white and black. The (CBA), on this interpretation, fails to derive contradictory claims, because despite superficial appearances (i) and (iv) are not really claims about the same subject. Rather (i) is a claim that a part of the chessboard is white, and (iv) is a claim that a (presumably different) part is not white.[39]

Alternatively, we might take the claim that a chessboard has a color as a claim that the color *partially* belongs to the chessboard, where this is thought about as a claim about the way in which one thing belongs to another. The first two premises can then be put as follows:

(i*)   The chessboard is partially white (i.e. White partially belongs to the chessboard.)

(ii*)   The chessboard is partially black. (i.e. Black partially belongs to the chessboard.)

It is natural, on this interpretation, to take (iii) as (iii*):

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[39]   This way of taking the chessboard argument is analogous to reading Aristotle's claim, "*Leukos anthrôpos esti,*" as "A man is white."

(iii*)   Anything which is partially black is partially not white.

But all that follows from (i*)-(iii*) is:

(iv*)   The chessboard is partially not white.

The argument to (iv*) is valid, and (i*)-(iii*) are true, but it seems wrong to say that (i*) and (iv*) are contradictory opposites. Rather (i*) seems to have (iv**) as a contradictory opposite.

(iv**) It is not the case that the chessboard is partially white.

To validly conclude (iv**) we would need (iii**).

(iii**) If a thing is partially black, then it is not the case that it is partially white.

But (iii**) just doesn't seem to be something that we should accept. Similar reasoning applies to Aristotle's examples in the *De Interpretatione.* Aristotle seems mistaken in claiming that 'Man is base,' and 'Man is noble,' count as contradictory. However, on my analysis, Aristotle's mistake isn't a matter of the two sentences having different subjects, as would be the case is we translated the relevant sentences as 'A man is noble,' and 'A man is base.' Rather Aristotle makes a mistake in not properly paying attention to the way in which predication must be qualified in thinking about each claim.

Aristotle generally requires that contradictory statements say that the same thing both does and does not belong to a thing at the same time and *in the same respect*.[40] However, in the cases under consideration, it appears that (i) and (iv) are contradictory opposites only because we ignore the respect in which black and white belong to the chessboard, viz. *partially*. When we do consider the respect in which one thing belongs to another, we can see that we don't have an argument that commits us to affirming and denying something of something in the same respect.

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[40]   See *Metaphysics* IV.3 1005b19-20.

The chessboard inherits the color predicates of its squares. Additionally, no object can have a color without having at least some parts that have that color. Finally, we will be inclined to say that a thing is wholly of a certain color if and only if all its parts are of that color.[41] On this picture, facts about the colors of composites are fixed once we fix the colors of all their simple parts. Whether facts about the colors of the composites can be reduced to facts about the colors of simples is a difficult question. But at the very least, we can give necessary and sufficient conditions for a composite's possessing a color in terms of the colors of its parts.

In the same way, on the account of predication *simpliciter* that we have been examining, Aristotle holds that what can be predicated of universals is wholly fixed by what can be predicated of particulars. Thinking of the relation between universals and particulars as analogous to the relation between a chessboard and its squares might go some way to helping us see why Aristotle has some of the views that he does about predication. There are, however, some serious questions about the analogy between universals and concrete particulars that need to be addressed.

Section 8.11: Universal Predication and Distributive Wholes

While the chessboard in our example does inherit the color properties of its squares, there are many other properties that the chessboard does not inherit from its squares. For example, from the fact that every square on the board is a one-inch square, it does not follow that the chessboard is a one-inch square. Conversely, it seems that the chessboard has certain properties that do not belong to any of the

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[41] Examples with colors often don't stand up to close inspection, and this case is no different. The claims made here are false about the colors of things and their parts in the real world. For example, the individual atoms of which things are composed don't seem to have any color. For purposes of the example, let's confine ourselves to a pixilated world. Let's say that the smallest objects in the world are monochromatic pixels. Furthermore, even if something looks wholly grey to us because its surface consists of closely arranged black and white pixels, we will insist that this is not a case in which a thing is wholly grey but is a case where we are misperceiving a thing that is partially black and partially white.

squares on the board. For example, it is a chessboard and an eight-inch square. To apply the inheritance principles holding in the case of color to other cases would be to commit a grave error. Nevertheless, Aristotle's claims about predication in the case of universals and particulars seem to be fully general. Aristotle thinks that universals and particulars inherit *all* of each other's predicates. Aristotle, therefore, needs to say that predication always behaves in the way that color-predicates behave in the chessboard example.

We might now worry, however, that Aristotle is mistaken to hold such a view. Imagine that we have three human beings: Arnold is six-feet tall, Barbara is five-feet tall, and Catherine is four-feet tall. Aristotle must then hold that *human* has (at least in part) each of these heights. In addition, both being-a-thing-shorter-than-Barbara and being-a-thing-taller-than-Barbara will belong (at least in part) to *human*. Furthermore, say that each human being on the planet weighs less than Darla the elephant. It follows that weighing-less-than-Darla will belong universally to *human*.

If we think that predicating something of a universal reduces to predicating something of some or all of its particulars, there needn't be anything strange about Aristotle's making these claims. The real subjects of predication will be the particulars and in claiming that a predicate belongs to some or all of universal we are simply claiming that a predicate belongs to some or all of the particulars that the universal is said-of.[42]

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[42]   The story on this view is remarkably similar to the story that we would tell if we took universals to be sets. Consider claims of the following form: ⌜π belongs to α⌝ where ⌜π⌝ is the name of a predicate, and ⌜α⌝ can be replaced by the name of a universal or the name of a particular, and say that universals are sets. In cases where ⌜α⌝ names a particular the claim made is that a predicate belongs to that particular. However, in cases where ⌜α⌝ names a universal, the claim made is not usually that a predicate belongs to the set but that a predicate belongs to some member of that set. When we add an explicit quantifier, like 'all' or 'some', we make a claim about some or all of the particulars in the set. In ordinary cases, when we claim that a predicate to belong to a set, we understand this as a claim that the predicate belong to members of that set. Sometimes, however, we want to make a claim not about a member of a set but about a set itself, 'Sethood belongs to *human*.' In English we can mark the difference by using or not using the indefinite article: consider 'Sethood belongs to human,' vs.

Aristotle's view looks a bit more peculiar if we take claims about universals as intensionally equivalent to, but distinct in meaning from, claims in which we quantify over particulars. What does it mean to claim that four-footedness, five-footedness, or six-footedness each partially belong to the universal *human*? When I make a claim that six-footedness belongs to Arnold, I assume that I can go and measure Arnold. Can I also measure the universal? According to my view that particulars are parts of universals, in measuring Arnold we literally measure a part of the universal. However, it is odd to claim that the universal has a height, where this is supposed to mean something other than the claim that a part of the universal has that height. Similarly, it seems odd to say that the weight of the whole universal is the sum of the weights of the particulars. Furthermore, the inheritance principle (PI3), and the fact that every human weighs less than Darla, together entail that weighing-less-than-Darla belongs to the universal *human* universally. However, the collective weight of all human beings is greater than the weight of Darla.

It is clear from these examples that Aristotle needs to say that when we universally predicate something of a universal, the predicate has to be taken to distribute over the particulars that the universal is said-of. When we predicate something universally of a universal, we do not predicate it of the instances of the universal taken collectively. However, the claim that the predicate should be taken to distribute over the individual instances of the universal seems very close to the claim that universally predicating something of a universal simply reduces to predicating it of the relevant particulars.[43] It is difficult to come up with an interpretation on which

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'Sethood belongs to a human'. Greek, however, seems to allow for a real ambiguity. "*Sethood anthropô huparchei,*" seems genuinely ambiguous between saying that sethood belongs to the set of humans, and saying that sethood belongs to a member of the set. In claiming that universals inherit the predicates of their particulars on the reductive or set-theoretic view, I mean that they inherit predicates in the second sense.

[43]   See section 8.9 for a more careful discussion of the sort of reduction at issue.

Aristotle takes the predicates of universals to distribute over particulars, but on which predicating something of a universal is not to be identified with predicating it of some or all of the relevant particulars.[44] The nature of the relation between predicating *simpliciter* something of a universal and predicating *simpliciter* that thing of the relevant particulars gives us some evidence that Aristotle reduces the first to the second. At the very least, I think that the account of predication *simpliciter* given to this point is consistent with the reductive view. As we will see in a moment, however, the situation is very different when it comes to *kath' hauto* and *katholou* predication as these are understood in the *Posterior Analytics*.

Section 8.12: Predicational Inheritance and Inherence

Whatever we decide on the question of reduction, Aristotle's view of predication *simpliciter,* as outlined so far, commits him to the inheritance claims (PI1)-(PI3). This commitment entails that we can provide purely extensional truth-conditions for any claim in which something is predicated of a universal subject. Aristotle's claim at 2b1-3 that *color* inheres in *body* only if it inheres in a particular body amounts to an inheritance claim about inherence. I can think of two arguments by which we might get from an inheritance claim about predication to an inheritance

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[44] An additional problem for my general view that Aristotelian universals are understood as wholes comes about when we consider the fact that predicates of universal subjects should be taken to distribute over individuals. Aristotle's claim that predicates distribute over the instances of universals is closely related to the fact that he takes universals to be what we might call 'distributive' rather than 'collective' wholes. Aristotle makes this distinction in *Metaphysics* Δ.26 (1023b26-32). A universal, like *human*, is one and is said to be a whole and a universal in the sense that it is encompasses many things by being predicated of each of them, and by their each being one human being. *Human* is therefore a distributive whole. A collective whole, by contrast, is one thing made out of a plurality of things where none of the things in the plurality is itself a whole of the same sort as the collective whole. For example, a human body is a single thing containing many organs where none of these organs is, itself, a human body. When I predicate things of distributive wholes, it is natural to take me to say something about some or all of the parts of the thing (although think about cases where I say that *human* is a universal). On the other hand, when I say something about a collective whole, I do not generally take the predicate to distribute over the parts. It seems that the wholes of mereology are best thought as collective wholes, while distributive wholes are better thought of as sets. My own position, that Aristotle takes universals to be distributive wholes, and that he thinks of the relation between universals and particulars mereologically rather than set-theoretically, is therefore somewhat problematic.

claim about inherence. One of these arguments was in the background in sections 2 and 3. If Aristotle accepts the principle (Analysis), and holds that all instances of predication *simpliciter* must either be instances of inherence or instances of the said-of relation, there is the following argument to Aristotle's claim at 2b1-3:[45]

> (Argument III)
>
> (i)   *Color* is in *body*. [Assumption]
>
> ∴(ii) *Color* is predicated of *body*. [(i) by (Analysis)]
>
> ∴(iii) There is a particular body, such that *color* is predicated of it. [(ii) by (PI1)]
>
> (iv) *Color* is not said-of any particular body. [One thing is a substance, the other a quality.]
>
> ∴(v) *Color* inheres in a particular body. [(iii), (iv) by (Analysis)].

The second argument by which we might get from (PI1)-(PI3) to the claim at 2b1-3 requires us to give a nonstandard analysis of the claim that *color* is in *body*. Instead of taking the claim that *color* inheres in *body* as a claim in which *color* is predicated of *body*, imagine that we take it as a claim predicating the property of *being a thing in which color inheres* of the universal *body*. Call this property, *I*. If we were to take the claim that *color* in *body* as equivalent to *I* is predicated of *body*, we could construct the following argument for the claim that *color* inheres in some particular body.

> (Argument IV)
>
> (i)   *Color* is in *body*. [Assumption]
>
> ∴(ii) *I* is predicated of *body*. [(i) by logical equivalence]
>
> ∴(iii) *I* is predicated of some particular body. [(ii) by (PI1)]
>
> ∴(iv) *Color* is in some particular body. [(iii) by logical equivalence]

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[45]   (Analysis) x is a subject for y if and only if y inheres in x or y is said-of x. I take this principle to be equivalent to: y is predicated *simpliciter* of x if and only if y inheres in x or y is said-of x.

I do not think that Aristotle would accept (Argument IV), because I do not think that he would take (i) and (ii), or (iii) and (iv) to be logically equivalent. In fact, I do not think that Aristotle would hold that any proper predicate is indicated by "is a thing that *color* inheres in." Predication is a relation that holds between categorial entities, and inherence is not an entity in any category. Rather, inherence is a fundamental relation by which things in categories are related to one another.[46] So, if Aristotle has an argument from (PI1)-(PI3) to the claim that *color* is in a particular body, it will have to be something like (Argument III).

Aristotle would be inclined to accept (Argument III), and the (Analysis) principle that is crucial to it, if he had accepted that the inherence and said-of relations were both types of predication *simpliciter* and that they were the only types of predication *simpliciter.* Given (Analysis) and (PI1)-(PI3), we would then be able to establish the following inherence inheritance principle (II1).

> (II1) For all universals, x and y, x inheres in y if and only if there is some particular, z, such that y is said-of z and x inheres in z.[47]

In accepting (Argument III), therefore, Aristotle commits himself to the view that we can give necessary and sufficient conditions for the inherence of something in a universal in terms of its inherence in particulars. Inherence then behaves precisely like predication *simpliciter.*

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[46]   For a similar reason, I do not think that we can argue against (PI1)-(PI3) by claiming that *universality* is predicated of *human*, while it can't be predicated of any particular human. 'Universal' and 'particular' do not name categorial entities. Rather for a thing to be universal is for it to be a thing that is said-of something, and to be a particular is to be a thing that is not said-of anything else. This is not how Aristotle defines universality and particularity in the *De Interpretatione*, but I take his views about universals (see chapter 7) to allow us to offer these glosses on the meaning of '__ is a universal'. Michael Wedin (2000) coins the term "metaontological" to talk about terminology that has a role in Aristotle's metaphysics, but which cannot be taken to refer to any of the *things* that Aristotle takes to exist, i.e. categorial entities.

[47]   We also need the claim that no accident can be said-of any substance, and the claim that only accidents inhere in anything. (Argument I) establishes the left to right direction of (II1). For the right to left direction we have the following argument. Assume that there is some z such that y is said-of z and x inheres in z. By (Analysis), x is predicated of z. By (PI1), x is predicated of y. But, x is not said-of y, since one is an accident and the other a substance. So, by (Analysis) x inheres in y.

In the next section of this chapter, I will argue both that Aristotle recognizes a different kind of predication for which he uses the term '*katholou*', and that inherence should be understood in terms of this second sort of *katholou* predication. This other variety of *katholou* predication is not a type of predication *simpliciter* and does not conform to (PI1)-(PI3). Furthermore, the new conception of predication corresponds to a more nuanced understanding of the relation between particulars and universals on which Aristotle's claim at 2b1-3 is false.

Section 8.13: Kath' Hauto Predication in the Posterior Analytics

In the discussion of predication *simpliciter* in sections 5-12, I argued that Aristotle either identifies predicating *simpliciter* something of a universal universally, for which he uses the term '*katholou*' in the *De Interpretatione*, with predicating something of each and every particular instance of a universal. However, in *Posterior Analytics* I.4, Aristotle distinguishes something's holding in every case (*kata pantos*) from its holding universally (*katholou*). His use of '*katholou*' in the *Posterior Analytics*, therefore, differs from his use of the same term in the *De Interpretatione* and *Prior Analytics*.

Aristotle says that something holds *kata pantos* if it holds in every case and at all times (78a28-33).[48] In filling out what it means to say that one thing holds of

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[48] The fact that *kata pantos* predication requires that the predicate always be said of the subject is difficult for me to reconcile with my view that Aristotle is a presentist. I can give only a brief comment of how I think things might go. If the truth of a claim relies on something other than the present state of the world, then presentism is false. In the *Prior Analytics* (34b7ff) Aristotle recognizes a use of the present tense in talking about logical matters that is something like an eternal present. In such cases, the use of 'all' is justified only if something holds of all past present and future instances of a universal. Furthermore, unlike in the *Posterior Analytics,* in the *Prior Analytics*, Aristotle claims that predication in all cases and always suffices for *katholou* predication. We might be able to reconcile the claim that Aristotle is a presentist with his treatment of *kata pantos* predication, if we claim that the truthmakers for *kata pantos* are present facts about universals, rather than past and future facts about particulars.

In fact, given Aristotle's thoughts about future contingent propositions, it seems that a *kata pantos* claim will be determinately true only in cases where it is non-contingent that the predicate will apply to future particulars. But it is non-contingent that the predicate applies to future particulars only in cases where the predicate applies not only *kata pantos* but also *katholou*. There is no present truthmaker for a future contingent proposition. There are, however, present truthmakers for non-contingent future

another *kata pantos*, Aristotle is content to quantify over particulars, "If animal holds

of man *kata pantos,* then if it is true to call this here a man, it is also true to call it an

animal (73a29-31)."[49] On the account of *katholou* predication embodied in (PI1)-

(PI3), any case in which we have *kata pantos* predication ought to also be a case in

which we have *katholou* predication—in which we are predicating something

universally of a universal.

　　However, later in *Posterior Analytics* I.4, Aristotle claims that one thing

belongs to another *katholou* only if some additional requirements are met:

> I say that [one thing] belongs universally [to another], when it both belongs in
> every case and belongs to a thing in its [i.e. the second thing's] own right and
> *qua* itself (73b26-27).[50]

I am using 'in its own right' to translate Aristotle's use of *'kath' hauto'*, for which we

often see the Latin equivalent '*per se*'. '*Qua* itself' is my way of rendering Aristotle's

'*hê auto*'. The sense of '*hê auto*' is that the predicate must belong to subject insofar as

the subject is itself. In other words it does not belong to the subject only insofar as the

subject has a certain coincident.[51] Aristotle tells us at 73b28ff that 'in its own right'

and '*qua* itself' are synonymous.

　　At 73a34-b25, Aristotle discusses what it means to claim that something

belongs to a thing *kath' hauto.* Aristotle distinguishes two ways in which one thing

can belong to another *kath hauto.*

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propositions. However, these truthmakers are composed of universals that exist in the present, and not
of particulars that exist in the future. For example, the sentence 'Every human born after 2010 will be
rational,' is true because of the relationship between the universals *human* and *rational*. The truth of a
future claim that is underwritten by the state of currently existing universal is compatible with
presentism.
[49]　　Aristotle is using 'this here' (*hode*) to stand for any arbitrary case. For further claims about
katholou predication and proof in an arbitrary case, see 73b32ff.
[50]　　"καθόλου δὲ λέγω ὃ ἂν κατὰ παντός τε ὑπάρχῃ καὶ καθ' αὐτὸ καὶ ᾗ αὐτό."
[51]　　Aristotle draws the contrast between accidental and *per se* predication at 73b6-16. Aristotle
usually contrasts belonging to something accidentally (*kata sumbebekos* or *per accidens*) with
belonging to something *kath' hauto*. Aristotle seems to take 'because of itself' (*di' hauto*), '*qua* itself',
and 'in its own right' as meaning the same thing throughout *APo* I.4.

Those things belong to something *kath' hauto* which belong to it in the what it is—for example, line belongs to triangle or point to line (for the being (*ousia*) of these [triangle and line] is out of those [line and point], and they [line and point] belong in the definition saying what these [triangle and line] are). [Those things also belong to something *kath' hauto*] for which the things to which they belong themselves belong in the account which makes clear what they are—for example, straight belongs [*kath' hauto*] to line as does curved, and odd and even, prime and composite, square and oblong belong [*kath' hauto*] to number. In all these cases, they (e.g. line in one case, number in the other) belong in the account saying what it is. (73a34-b1)[52]

In explicating the first sort of *kath' hauto* belonging, Aristotle gives us two criteria which he subsequently seems to equate.

(KA1a) For all x and y, x belongs *kath' hauto*$_1$ to y iff the being (*ousia*) of y is *from x*.

(KA1b) x belongs *kath' hauto*$_1$ to y iff x is in the account of what y is.

(KA1b) tells us that the elements of a thing's definition, its genus and differentia, belong to it *kath hauto*$_1$. Aristotle goes on to say that line belongs in the definition of what a triangle is, perhaps because he takes the definition of triangle to be something like 'three-lined planar figure'.[53]

There are two slightly different ways to take (KA1a), depending on how we take 'the being of y is from x' ('*ousia autôn ek toutôn*') at 73a35. We might take Aristotle to mean that *x* is part of the essence of *y*, in which case the (KA1a) has the same meaning as (KA1b). However, Aristotle might also mean that *x* is part of the substance of *y*, in the sense that *xs* are component parts of *ys*. The example with the triangle would then be telling us that triangles are made out of lines. While the latter

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[52]   Καθ' αὑτὰ δ' ὅσα ὑπάρχει τε ἐν τῷ τί ἐστιν, οἷον τριγώνῳ γραμμὴ καὶ γραμμῇ στιγμή (ἡ γὰρ οὐσία αὐτῶν ἐκ τούτων ἐστί, καὶ ἐν τῷ λόγῳ τῷ λέγοντι τί ἐστιν ἐνυπάρχει), καὶ ὅσοις τῶν ὑπαρχόντων αὐτοῖς αὐτὰ ἐν τῷ λόγῳ ἐνυπάρχουσι τῷ τί ἐστι δηλοῦντι, οἷον τὸ εὐθὺ ὑπάρχει γραμμῇ καὶ τὸ περιφερές, καὶ τὸ περιττὸν καὶ ἄρτιον ἀριθμῷ, καὶ τὸ πρῶτον καὶ σύνθετον, καὶ ἰσόπλευρον καὶ ἑτερόμηκες· καὶ πᾶσι τούτοις ἐνυπάρχουσιν ἐν τῷ λόγῳ τῷ τί ἐστι λέγοντι ἔνθα μὲν γραμμὴ ἔνθα δ' ἀριθμός." (73a34-b1)

[53]   I am not sure whether Aristotle counts this as a definition by genus and differentia. Perhaps 'planar figure' picks out a genus and 'three-lined' picks out a differentia. In any case, I assume that Aristotle is telling us that there is essential reference to *line* in the definition of triangles, just as there is essential reference to *rational* and *animal* in the definition of *human*.

way of construing (KA1a) might yield the same facts about *kath' hauto*$_1$ predication as (KA1b) in the case of triangles, it is unclear that the two will always go together. The sorts of parts out of which an object of a given kind is composed might not be referred to in giving a definition of that kind of object. Instead, we might point to the genus and differentia of an entity in giving its definition.

Whatever we decide about the correct way to take (KA1a), it is reasonable to hold that the genus and differentia of an object belong to it *kath' hauto*$_1$ on the grounds of (KA1b). Therefore, when I talk about what is predicated *kath' hauto*$_1$ of a thing in the following, I will confine myself to those things that are belong *kath' hauto*$_1$ to a thing of a thing according to (KA1b).[54] We predicate the elements of a thing's definition of it *kath' hauto*$_1$.[55] I would also include predicating its species of an individual as an instance of *kath' hauto*$_1$ predication. Although individuals do not have proper definitions, when we predicate *human* of Socrates, we are saying what Socrates is just as we are saying what a species is in giving its definition. There is a particularly close relation between *x*'s being *kath' hauto*$_1$ predicated of *y*, and *x*'s being said-of *y*. It is obvious that whatever immediately said-of *y* can be *kath' hauto*$_1$ predicated of *y*. I think that we can go further and claim that Aristotle would identify *kath' hauto*$_1$ predication with the said-of relation. In specifying the genus *animal* of Socrates, Aristotle thinks that I tell you what Socrates is. Similarly, in telling you that *corporeal* belongs to *cat*, I tell you what *cat* is. In each of these cases, the predication involved seems to be of the same type as *kath' hauto*$_1$ predication.

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[54]   Ross (1949) p 519 points out that, in claiming that one thing 'belongs' (*huparchein*) to another, Aristotle could be conceiving of a relation of which predication is only one kind. If this were the case, then *arm* could belong *kath' hauto*$_1$ to *human* without being a thing that is predicated of *human*. While Ross might be right, I am presently concerned only with cases in which one thing is *predicated kath' hauto*$_1$ of another, and I think that this relation is identical to the said-of relation.

[55]   I am assuming that we predicate both the genus and the differentia of a species of that species *kath' hauto*$_1$. There is some question about whether I strictly speaking specify what a species or an individual is when I give its differentia.

If *kath' hauto₁* predication can be understood in terms of the said-of relation, then *kath' hauto₂* predication is closely related to inherence. Aristotle explicates the second sort of *kath' hauto* belonging as follows:

(KA2) For all x and y, x belongs *kath' hauto₂* to y if and only if y must be referred to in giving the account of what x is.

Aristotle gives several examples of one thing's belonging *kath' hauto₂* to another. Straight and curved are said to belong to line in this way. Odd, even, prime, composite, equilateral and oblong are said to belong to number *kath' hauto₂*. Any account of what it is to be curved or straight will need to mention lines—for a thing to be curved is for the thing to be a curved line. Similarly, any account of even and odd will have to talk about numbers—for a thing to be odd is for the thing to be an odd number.

In each of these cases, what is predicated *kath' hauto₂* of a subject also inheres in that subject. Say that we are dealing with two universals, A and B. A is predicated *kath' hauto₂* of B only if we need to specify B in saying what A is. However, in such a case it is clear that A could not exist without B. A is obviously in B, in some non-technical sense of 'in', and A is not a part of B. Therefore, A is a *kath' hauto₂* predicate of B, only if A inheres in B. Whether Aristotle takes the converse to be true is a difficult question to which I will return shortly.

Section 8.14: Kath' Hauto Predication and Three Types of Necessary Predication

Aristotle equates belonging to something *kath' hauto* with belonging to something because of itself and of necessity.

> The things that are said *kath' hauto* in the case of what is unqualifiedly known, either as belonging in the subjects of predication or as things that the subjects belong in, are said both through themselves (*di' hauto*) and of necessity. For it is not possible for these not to belong either simply or as regards the opposites; for example either straight or curved must belong to line and either odd or even must belong to number. For the privation or contradictory in the same genus is the contrary, for example what is not odd in the case of numbers is even, insofar as this

follows. So that if is necessary to affirm or deny [that an attribute belongs to a subject], it is also necessary that these belong *kath' hauto*. (73b16-24)[56]

The things that belong in (*enhuparchein*) a subject of predication are the things that are said *kath' hauto*$_2$ of that subject, while the things that the subject belongs in (*enhuparchesthai*) are said of the subject *kath' hauto*$_1$.[57] Aristotle further tells us that what is predicated of something *kath' hauto* belongs to that thing of necessity, and

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[56] "τὰ ἄρα λεγόμενα ἐπὶ τῶν ἁπλῶς ἐπιστητῶν καθ' αὐτὰ οὕτως ὡς ἐνυπάρχειν τοῖς κατηγορουμένοις ἢ ἐνυπάρχεσθαι δι' αὐτά τέ ἐστι καὶ ἐξ ἀνάγκης. οὐ γὰρ ἐνδέχεται μὴ ὑπάρχειν ἢ ἁπλῶς ἢ τὰ ἀντικείμενα, οἷον γραμμῇ τὸ εὐθὺ ἢ τὸ καμπύλον καὶ ἀριθμῷ τὸ περιττὸν ἢ τὸ ἄρτιον. ἔστι γὰρ τὸ ἐναντίον ἢ στέρησις ἢ ἀντίφασις ἐν τῷ αὐτῷ γένει, οἷον ἄρτιον τὸ μὴ περιττὸν ἐν ἀριθμοῖς ᾗ ἕπεται. ὥστ' εἰ ἀνάγκη φάναι ἢ ἀποφάναι, ἀνάγκη καὶ τὰ καθ' αὐτὰ ὑπάρχειν (73b16-24)." Following Ross (1949), Mignucci (1979) as cited in Barnes (1994), the commentary in Barnes (1994), and Irwin and Fine (1995), I take 'τοῖς κατηγορουμένοις' to refer (somewhat atypically) to the subjects of predication. Barnes (1975) as found in Barnes *Revised Oxford Translation* (1984), and the translation in Barnes (1994) take 'τοῖς κατηγορουμένοις' to refer to the things that are predicated. The underlying meaning of the passage remains the same on both readings, but the order of the claims is reversed. If we take the passage in the latter way, then the things that belong in the things predicated are such that the predicates are said *kath' hauto*$_1$ of them, and the things that the predicates belong in are things that the predicates belong to *kath' hauto*$_2$.

[57] Barnes chooses to translate '*enhuparchein*' and '*enhuparchesthai*', which are formed out of the prefix for 'in' (*en*) and the active and passive infinitives of the verb 'to belong to' (*huparchein*), 'to inhere in' and 'to be inhered in'. I am reluctant to follow this practice, because it might suggest that things inhere in their species or genera in the technical sense of 'inheres' familiar from our discussion of the *Categories*. 'Inherence', in the technical sense of the *Categories*, properly applies only to the first case above. For a predicate to belong *kath' hauto*$_2$ is for the predicate to belong in that subject as a thing that inheres in that subject. For a predicate to belong *kath hauto*$_2$ to a subject is for the predicate to be said-of the subject, which Aristotle describes as a case where the subject belongs in the predicate. Aristotle does sometimes claim that a species is in a genus, and he might be claiming that the subjects of predication 'belong in' the genera predicated of them in this sense of 'belonging in'. We would seem, therefore, to have two different senses of 'belonging in' at issue here. Nevertheless, Aristotle is using the active and passive form of the same verb to talk about these two cases of *kath' hauto* predication, and it would be preferable to find a single sense for the two terms. One suggestion is that we take Aristotle to be thinking spatially in terms of a pictorial model of syllogistic logic (like Euler circles). On this view, we will say that one thing 'belongs in' another when the Euler circle representing the first thing/term is properly drawn inside that representing the second. Cases of *kath' hauto* predication, in which the subject-circle is to be drawn inside the predicate-circle, will be cases in which we predicate *kath' hauto*$_1$ a thing of something that it is said-of; for example, when we predicate a genus of a species. Cases in which the predicate circle is properly drawn within the subject circle, will be cases in which a predicate belongs *kath hauto*$_2$ to a subject in which it inheres. The case where we predicate one thing of another *kath' hauto*, and in which the subject and the predicate pick out the very same circle will be problematic. This might be the case with a species and the differentia in its definition. As I have pointed out in previous chapters, differentiae are tough to deal with. I think that we should respond (and that Aristotle might have responded) to this problem by identifying species and their final differentia, and denying that we have a proper case of predication here.

distinguishes two sorts of necessity. One thing can belong to another of necessity unqualifiedly, or it can belong to another of necessity 'as regards the opposites'.

A predicate belongs to a subject of unqualified necessity, when it is not possible for the predicate to fail to belong to the subject. Aristotle doesn't provide us with examples, but *animal* belongs of unqualified necessity to *human*. While Ross (1949) and Barnes (1994) take all and only cases in which something belongs of unqualified necessity to a subject to be cases where the thing is predicated of the subject *kath hauto*$_1$, I think that a *kath hauto*$_2$ predicate might also belong to a subject of unqualified necessity. We might, for example, hold that *color* belongs to *body* of unqualified necessity.[58] I am somewhat reluctant, therefore, to think that the two types of necessity map neatly onto the two sorts of *kath' hauto* predication.

Aristotle gives us two examples of things that belong to a subject of necessity 'as regards the opposites'. Every number must be either even or odd, and every line must be either crooked or straight. So even belongs to number of necessity as regards the opposites, as does odd. Straight belongs to line of necessity as regards the opposites, as does curved. In the examples that he discusses, Aristotle talks only about pairs of opposites. However, we might extend the use of 'opposites' ('*ta antikeimena*') to cases is which there are several mutually inconsistent items. I suggest that black, white and the myriad specific shades of other colors will count as opposites for Aristotle's purposes here. For predicates to be opposites will be for them to belong to the same contrary class. Contraries belong to the same contrary class and will be the most extremely opposed members of the class. In addition, if there are any intermediates between these contraries, these will belong to the same contrary class as

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[58]   We should do so, if we hold that every body has a color. If we take clear bodies to lack color, then it will not be unqualifiedly necessary that color belong to body. However, if clear things are not colored, then being clear and being colored seem to be exhaustive alternatives for bodies. Furthermore, clarity and coloredness would also seem to be contrary species of a single genus. This genus then seems both to belong to body of unqualified necessity and to be predicated of it *kath' hauto*$_2$.

the contraries themselves. Aristotle takes members of a contrary class to exclude one another, in the sense that nothing can possess more than one distinct member of a contrary class at the same time and in the same respect.[59]

With these points in mind, we can define what it is for a predicate to belong to a subject of necessity as regards the opposites. A predicate will belong to a subject in this way if and only if the predicate is a member of a contrary class such that it is necessary that the subject possess one of the properties in that contrary class.[60]

Aristotle tells us that, whenever a predicate belongs *kath' hauto*$_2$ to a universal subject, it is necessary that every instance of the subject possess either that predicate or one of the predicates in the contrary class of that predicate. However, Aristotle

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[59] Aristotle's views about the many different sorts of opposition are difficult to sort out, and I cannot treat this issue fully at present. In *Categories* 10 Aristotle uses forms of '*antikeisthai*' as a general term for opposition, and lists four types of opposition: relativity , contrariety (the sort of opposition holding between *ta enantia*), privation (*sterêsis*) vs. possession, and affirmation vs. negation or contradiction (*antiphasis*). Among contraries, Aristotle distinguishes pairs of contraries where there is no state intermediate between the two—like sickness and health or odd and even—from pairs where there are intermediates—black and white or good and bad. In the latter case, Aristotle tells us that it is not necessary for one or the other of the pair of contraries to belong to the things of the contraries are naturally predicated, while in the former case one or the other contrary must belong to the relevant sort of thing. For example, either even or odd must belong to number. However, it is not the case that a body has to be black or white. Aristotle seems to base the latter claim on the fact that a body might have an intermediate color. Aristotle never tells us, however, whether a thing to which color naturally belongs must either be black, be white, *or* be of an intermediate color. However, it is hard to see why he would not this to be true (*modulo* the problem noted in note 58).

In the *Physics*, Aristotle claims that all coming to be and perishing is a matter of going from one contrary or intermediate state to another contrary or intermediate state. Furthermore, Aristotle tells us that the intermediates are 'out of' (*ek*) the contraries. Intermediate colors, for example, are 'out of' black and white. Aristotle seems to picture the intermediates as mixtures of contraries, each of which is present to some extent. If this is the right way to take intermediates, then we can see a thing's having any intermediate attribute in a contrary class as its having *both* contraries to some extent.

[60] In some cases there will be something immediately said-of every member of a contrary class that belongs to a subject of necessity as regards the opposites. In such a case, the superordinate kind will belong to the subject of necessity without qualification. For example, *color* is said-of black, white, and all the intermediate colors. And each of these belongs to *body* of necessity as regards the opposites. *Color* therefore seems to belong to *body* of unqualified necessity. In other cases, the immediate genera of the members of the contrary class will not be the same but will themselves be contrary (see *Categories* 14a19ff). In these cases, it seems that each of the contrary genera will belong to a thing of necessity as regards the opposites. For example, justice and injustice are members of a contrary class along with whatever intermediates are between these, and each of these predicates seems to belong *kath' hauto* to moral persons. Justice belongs the genus *virtue* and injustice to the genus *vice*, and each of these seems to belong to *person* of necessity as regards the opposites.

seems to overlook another possible meaning of '*x* belongs of necessity to *y*', and neglects to mention another way in which a *kath' hauto*$_2$ predicate must belong to its subject.[61] When we say that x belongs of necessity to y, we might mean either that x can't exist without belonging to y, or that y cannot exist without having x belong to it. For example, when I say that *color* belongs of necessity to body, I mean that *color* cannot belong to anything other than *body*. However, when I say that *animal* belongs of necessity to human beings, I mean that there can't be any human beings to which *animal* fails to apply.

When something is predicated *kath' hauto*$_2$ of a subject, it cannot belong to any subject wholly distinct from that subject. For example, odd and even can't belong to anything other than the universal *number*, universals subordinate to *number*, and individual numbers. Let's say that a predicate belongs of necessity* to a subject when the predicate couldn't belong to anything wholly distinct from that subject. It seems that belonging of necessity*, rather than the sort of necessary belonging discussed by Aristotle, follows directly from the definition of *kath hauto*$_2$ predication. In fact, as I discuss later, some of Aristotle's examples of *kath' hauto* predication make more sense if we go so far as to define *kath' hauto*$_2$ predication as predication of necessity*. On the other hand, belonging to something of necessity as regards the opposites, which is the relation that Aristotle discusses in this passage, does not seem essential to explicating *kath' hauto* predication.

It is also important to point out that while all *kath' hauto* predicates belong of necessity to their subjects, it is not the case that whatever belongs of necessity to a subject is a *kath' hauto* predicate.[62] For example, *odd* and *even* belong to *number* both *kath' hauto* and of necessity as regards the opposites. Since oblong (i.e. not square)

[61]   See Barnes (1994) p 118, and Sorabji (1980) for similar observations.
[62]   This claim seems true whether we take 'of necessity' in the way that Aristotle discusses or on the alternative meaning that I mention in the previous paragraph.

numbers are a type of number, every oblong number is either even or odd. It seems then that *odd* and *even* belong to *oblong* of necessity as regards the opposites. However, *odd* and *even* will not belong *kath' hauto* to *oblong*, since *oblong* does not occur in any account of what *odd* and *even* are.

Section 8.15: Katholou Predication in the Posterior Analytics

After telling us about belonging to something *kata pantos* and *kath' hauto*, Aristotle turns to *katholou* predication. He tells us that what belongs to something *katholou* belongs to it *kata pantos*, *kath' hauto*, and *qua* itself (*hê auto*). The example of *katholou* predication that Aristotle gives us, however, is problematic. He tells us that having interior angles equal to two right angles belongs *katholou* to triangle. Furthermore, he tells us that having angles equal to two right angles belongs to a triangle *kath' hauto* (73b30-32). However, neither of the senses of *kath' hauto* belonging discussed above seems to fit this case, since neither of these terms seems to appear in the definition of the other. I will return to this problem in a moment. First, however, I want to turn to Aristotle's discussion of the relation between *katholou* predication and proof.

At 73b32, Aristotle tells us that what belongs to a subject *katholou* can be primitively proven to belong to a chance instance of the subject.[63] On the basis of this criterion, Aristotle denies that having two right angles belongs *katholou* to isosceles. We can prove that having two right angles belongs to a chance isosceles triangle, since

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[63]   "τὸ καθόλου δὲ ὑπάρχει τότε, ὅταν ἐπὶ τοῦ τυχόντος καὶ πρώτου δεικνύηται (73b32-33)." It is most natural to take a phrase of the form 'δεικνύηται + ἐπὶ + x (genitive adjective)' as something like 'is proved in the case of an x instance.' We can prove something of a chance (τυχόντος) instance when we can prove it of any arbitrary case. The fact that 'πρώτου' is in the genitive case as an object of the preposition 'ἐπὶ' would lead us to take primitiveness to belong to the instance of which something is proved. However, in what follows, it makes more sense to take primitiveness to be an attribute of proofs rather than of instances. I take 'πρώτου' adverbially, although this isn't grammatically justified.

we can prove this of all isosceles triangles. This proof will not be primitive, however, because having two right angles can also be proven of a chance triangle.

It will be helpful to give a more precise characterization of proving something of a chance instance of a universal, and primitively proving something of a chance instance of a universal. When Aristotle talks about proving something of a chance instance of a universal, he means that we can prove it of any possible instance *qua* that universal. For example, say that *t* is a triangle. Since *t* is a triangle, it is also a figure. Since we can prove of *t* that it has two right angles, we can prove of something that is an instance of figure that having two right angles belongs to it. However, we should note two facts. First, we could not prove that having two right angles belongs to any chance instance of figure. Second, our proof that *t* has two right angles will need to proceed from facts about *t* other than *t's* being a figure. For example, we need to take into account *t's* being a triangle. We can distinguish proving something of a thing that happens to be an instance of a universal from proving something of a thing *insofar as it is an instance of that universal*. We can distinguish these two sorts of proof as follows.

> (PIU weak) Where P is a predicate, and U is a universal, we can weakly prove P of an instance of U if and only if, there is an instance of U, u, and there is a demonstration concluding that that P belongs to u.

> (PIU strong) Where P is a predicate, and U is a universal, we can strongly prove P of an instance of U if and only if, there is an instance of U, u, and there is a demonstration which essentially contains the premise that U belongs to u and which concludes that P belongs to u.[64]

The latter notion is significantly stronger, and requires that the proof proceed from the fact that something is an instance of the given universal. When Aristotle talks about proving something of an instance of a universal, I take him to have the stronger

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[64]   A demonstration will contain a premise essentially if we cannot remove the premise without rendering the demonstration invalid. The idea is to prevent addition of superfluous premises.

notion in mind. Furthermore, we can strongly prove something of any chance instance of a universal only if we can prove it of any possible instance of that universal.

> (PCIU) Where P is a predicate, and U is a universal, we can strongly prove P of any chance instance of a U, if and only if for any possible instance of U, u, there is a demonstration which essentially contains the premise that U belongs to u and which concludes that P belongs to u.

Sometimes we will be able to strongly prove something of any chance instance of a universal, but it will also be possible to strongly prove the same thing of a more general universal. For example, Aristotle considers a case where we have a series of proofs in which we separately prove that having two right angles belongs to instances of scalene, equilateral, and isosceles triangles. He seems to be considering a case in which we have a proof proceeding from the fact that something is an isosceles triangle to the conclusion that it has two right angles, where this proof crucially involves the fact that the thing in question is isosceles. These proofs might all count as cases of strongly proving something of a chance instance of the universal *isosceles*, but they will not count as cases of primitively proving something of an instance of a universal. We can primitively prove something of an instance of a universal, only if we can strongly prove it of an instance of universal, and we cannot strongly prove the same thing of an instance of a more general universal.

> (PPCIU) Where P is a predicate, and U is a universal, we can primitively prove P of any chance instance of a U, if and only if for any possible instance of U, u, there is a demonstration which essentially contains the premise that U belongs to u and which concludes that P belongs to u, and for all universals superordinate to U, U*, it is not the case that we can strongly prove P of any chance instance of U*.

We cannot primitively prove that having two right angles belongs to isosceles, because we can strongly prove that it belongs to triangle and triangle is superordinate to isosceles. To express what is essentially the same point in a typically Aristotelian way, having two-right angles belongs to isosceles not *qua* isosceles but *qua* triangle.

Having two right angles, therefore, does not belong to isosceles *qua* itself (*hê auto*). Therefore, having two right angles does not belong *katholou* to isosceles, but belongs to more things than isosceles.

From the foregoing facts, and the fact that having two right angles will belong to isosceles *kata pantos*, it follows that Aristotle doesn't accept an inheritance principle akin to (PI3) for his present conception of *katholou* predication. If belonging to all the particular instances of a universal were both necessary and sufficient for belonging to that universal *katholou*, then Aristotle would have to hold that having two-right angles belonged *katholou* to isosceles. Since he denies the latter claim, Aristotle must deny the corresponding inheritance principle.

Section 8.16: A Problem with Aristotle's Conception of Kath' Hauto Predication

Since having two right angles belongs to isosceles *kata pantos*, by the definition of *katholou*, Aristotle must deny that triangle belongs to isosceles *kath' hauto* and *qua isosceles*. Furthermore, Aristotle equates belonging to something *kath hauto* with belonging to it *qua* itself. So he must deny both that having two-right angles belongs to isosceles *kath' hauto* and that having two right angles belongs to isosceles *qua* itself. We have already seen why Aristotle denies the latter claim. However, it is unclear whether he can deny the former claim without also being forced to deny that having two right angles belongs *kath' hauto* to triangle.

Aristotle would presumably hold that having two right angles belongs to isosceles of (unqualified) necessity, since it is impossible for something to be an isosceles triangle without having two right angles. However, it is clear that having two right angles belongs to isosceles in neither of the senses of '*kath' hauto*' defined earlier. Having two right angles is not an element of the definition of isosceles, nor is isosceles an element in the definition of having two-right angles. However, the same

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seems to be true in the case of triangle. Having two right angles is not an element in the definition of triangle, nor is triangle an element in the definition of triangle.

We have a conflict, therefore, between Aristotle's claim that every case of *katholou* predication must also be a case of *kath' hauto* predication, his definition of *kath' hauto* predication, and the fact that one of his examples of *katholou* predication seems to violate the definition of *kath' hauto* predication. In addition, we have the fact Aristotle equates *kath' hauto* and *hê auto* predication, while the example of having two right angles and triangle renders this equation problematic. The example of having two right angles and triangle is typical of a large class of cases. Whenever we have a *proprium* of a kind, a property that is necessarily coextensive with, but which is not essential to the kind, Aristotle will hold that the *proprium* belongs *katholou* to the subject. Claims predicating *propria* of their subjects play an important role in Aristotelian science. In addition, it is interesting to note in this regard that Aristotle will take *propria* to inhere in their subjects, in the sense of inherence defined in the *Categories*.

There are a few ways in which we could handle this conflict. First, we could insist that the account of what any *proprium* is will contain essential reference to the subject and that *propria* really are *kath hauto$_2$* predicates of their subjects, despite appearances to the contrary. Second, we could drop the claim that what belongs to something *katholou* must belong to it *kath' hauto*. Third, we could hold that the Aristotle's definition of *kath' hauto* at 73a35ff is too narrow.

The first option is the most conservative, and would be preferable to the other two were we able to make it work. Furthermore, we might think that Aristotle will take the definition of having two right angles to involve reference to triangle, given his

claim at 73b31-32 that "…triangle is equal to two right angles *kath' hauto*."[65] However, I can't think of any plausible account of what it is to have two right angles that contains essential reference to triangles.[66] Therefore, having two right angles cannot belong *kath' hauto*$_2$ to triangles on the definition of *kath' hauto*$_2$ predication that we have been working with. Furthermore, Aristotle draws a sharp distinction between necessary accidents of a thing, and components of a thing's essence. He takes it to be inappropriate to define triangle as a planar figure with interior angles equal to two right angles. Therefore, having two right angles cannot belong *kath' hauto*$_1$ to triangle. Therefore, I think that the first option for reconciling Aristotle's claims about *kath' hauto* predication is out.

The second option seems like the most radical, and also seems to be a non-starter. It seems central to Aristotle's understanding of *katholou* predication in the *Posterior Analytics* that *katholou* predicates are also *kath' hauto* predicates.

So I will go with the third option, and hold that Aristotle's definition of *kath' hauto* predication, specifically of the *kath' hauto*$_2$ predication, is too narrow. We want to extend Aristotle's definition of *kath' hauto* in such a way that he is correct to equate *kath' hauto* and *hê auto* claims, and in such a way that whatever belongs to a thing *katholou* will belong to it *kath' hauto*. We can get what we are after by replacing our initial definition of *kath' hauto*$_2$ predication, with a definition in terms of belonging to something of necessity*. As suggested earlier, *x* belongs of necessity* to *y* if and only if *x* belongs to *y* and it is impossible for *x* to belong to anything wholly distinct from *y*. Let's define a new type of belonging, belonging *kath' hauto*$_2$* as follows:

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[65]   "καὶ γὰρ καθ' αὑτὸ τὸ τρίγωνον δύο ὀρθαῖς ἴσον (73b31-32)." The use of '*kath' hauto…isos*' suggests a strong equivalence.

[66]   It seems more plausible that we will define having interior angles equal to two right angles in terms of something general about having internal angles, and some sort of quantitative differentia. Notice that on this view, it does seem to be the that the genus of having interior angles does belong to the genus of planar figures *kath' hauto*$_2$. To have interior angles is to be a planar figure with interior angles.

(KA2*) For all x and y, x belongs to y *kath' hauto*$_2$* if and only x belongs of necessity* to y.

However, given the definition of belonging of necessity* to something above, belonging of necessity* to a thing is equivalent to inhering in that thing. What belongs to a subject of necessity* is in it (in a non-technical sense of 'in') and is not a part of the subject. Furthermore on the Aristotelian assumption that no predicate can exist without belonging to a subject, what belongs to something of necessity* could not exist apart from that subject. (KA2*) is , therefore, equivalent to:

(KA2**) For all x and y, x belongs to y *kath' hauto*$_2$* if and only x belongs of necessity* to y.

We can also make a corresponding change to that definition of *kath' hauto*, as follows:

(KA*) For all x and y, x belongs *kath' hauto* to y, if and only if x belongs *kath' hauto*$_1$ to y, or x belongs *kath' hauto*$_2$* to y.

As we noted earlier, x belongs *kath hauto*$_1$ to y, if and only if x is said-of y. Therefore, (KA*) is equivalent to the claim that whatever belongs *kath' hauto* to a subject is either said-of that subject, or inheres in that subject.

(KA**) For all x and y, x belongs *kath' hauto* to y, if and only if x is said-of y or x inheres in y.

Whatever is said-of a subject belongs to that subject *hê auto*. Furthermore, whenever a predicate inheres in a universal subject, the predicate will belong to that subject *hê auto*. A general proof of the latter claim is hard to come by, but it is helpful to consider some examples. *Having two right angles* inheres in *triangle*, but does not inhere in *isosceles*. *Color* inheres in *body*, but not in *polar bear*. In each case the predicate belongs to whatever it belongs to *qua* the more general universal, but not *qua* the less general universal. I also take it to be the case that when a predicate belongs to a subject *hê auto*, any predicate subordinate to it also belongs to a that subject *hê auto*. For example, various color-universals like *pallor* are inherent in and

belong *hê auto* to *body*. Furthermore, I can't think of any cases of one thing's

belonging *hê auto* to another in which the first isn't said-of or inherent in the second.[67]

So belonging to something *kath' hauto*, as defined in (KA*) and (KA**), is equivalent

to belonging *hê auto* to that thing.

It also seems to be the case that whatever belongs to a thing *katholou*, also

belongs to it *kath' hauto* according to (KA*). As examples of *katholou* predication,

Aristotle seems to confine himself to things that either belong to the definition of a

subject or that are *propria* of the subject. But the things that belong in the definition of

a subject are *kath' hauto*$_1$ predicates which are said-of that subject, and *propria* inhere

in and are, therefore, *kath' hauto*$_2$* predicates their subjects. So whatever belongs to a

thing *katholou* also belongs to it *kath' hauto*.

The converse, however, is not the case. While whatever belongs to a subject

kath' hauto$_1$ also belongs to it *katholou*, some *kath' hauto*$_2$* predicates of a subject

will not belong to it *katholou*. For example, *pallor* will belong *kath' hauto*$_2$* to *body*,

but will not belong to it *katholou*, since it does not belong *kata pantos* to *body*.

As we saw earlier, whatever is said-of a thing belongs to it of unqualified

necessity, and whatever inheres in a thing belongs to it either of unqualified necessity

or of necessity as regards the opposites. The universal *having two right angles* belongs

to *triangle* of unqualified necessity, while *pallor* belongs to *body* of necessity as

regards the opposites. However, there will be cases in which one thing belongs to

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[67]   The case with *pallor* and *body* is actually a bit problematic. It is interesting to ask whether *pallor* belongs *hê auto* to *polar bear*, and whether it belongs *hê auto* to *body*. Presumably, the fact that something is a polar bear will often play a role in explaining why it is pale. Furthermore, while the fact that something is a body might play a role in its being colored, it isn't clear that it has the particular determinate color that it does because it is a body. We might wonder then whether it is true to say that *pallor* belongs *hê auto* to *body* and not to *polar bear*. Aristotle also suggests in the *Topics* that the universal *pale* inheres in *snow*, although this seems to violate his definition of inherence. I will bite the bullet here, and hold that Aristotle takes *pallor* both to belong *hê auto* and to inhere in *body*, and neither to belong *hê auto* nor to inhere in *polar bear*. I have to take the claim that *pale* inheres in *snow* as a mistake, akin to the mistake made in holding that *color* inheres in a particular body.

another of necessity, but in which the first thing is neither said-of nor in the second. For example, *having two right angles* will belong to *isosceles* of unqualified necessity, and *red* will belong to *bird* of necessity as regards the opposites. Therefore, belonging to something of necessity has a wider extension than does belonging to something *kath' hauto*.

On my suggested revision, the initial definition of *kath' hauto$_2$* predication (KA2) defines only one sub-kind of *kath' hauto$_2$** predication. However, this sub-kind is extremely important. We can see *kath hauto$_2$* predication as a kind of central case of *kath' hauto$_2$** predication. Any case which something is a *kath' hauto$_2$** predicate of a subject without being a *kath' hauto$_2$* predicate of that subject, is a case in which the predicate inheres in the subject without occurring in the account of what the predicate is does not involve reference to the subject. This will happen only happen in two sorts of case that I can think of.

First, we have the case in which the account of what the predicate is does not make reference to the subject, but in which the account of what something said-of the predicate is does refer to the subject. For example, we might not need to refer to *body* in specifying what *pallor* is, but we will refer to *body* in saying what *color* is. Second, we have the case where we will need to refer to something said-of the subject in giving an account of what something said-of the predicate is. For example, in the case of *triangle* and *having interior angles equal to two right angles*, we will need to refer to *figure* in giving an account of what it is to have interior angles. So whenever *P* is a *kath' hauto$_2$** predicate of a *S*, either *P* or something said-of *P* is a *kath' hauto$_2$* predicate either of *S* or of something said-of *S*. In giving his definitions of *kath' hauto* predication at 73a34ff, I think that Aristotle focuses exclusively on the central case of *kath' hauto$_2$* predication, and ends up giving too strict a definition.

Section 8.16: Kath' Hauto Predication and Inheritance

On the revisionary interpretation of *Posterior Analytics* I.4 that I have suggested, whatever inheres in a subject is predicated of that subject both *kath' hauto* and *hê auto*. We have already seen that the predicational inheritance principles to which Aristotle seems to subscribe in the *De Interpretatione* and the *Prior Analytics* fail for *katholou* predication as understood in the *Posterior Analytics*. These principles fail in the case of *katholou* predication because what belongs to a universal subject *kath' hauto* and *hê auto* is not determined by what belongs to the particular instances of that universal subject. While *having two right angles* belongs *kath' hauto* and *hê auto* to *triangle*, it does not belong in this way to *isosceles*. It is also clear that *having two right angles* belongs neither *kath' hauto* nor *hê auto* to any individual triangle. Once we see that inherence is a type of *kath' hauto* predication, we also see that something can inhere in a universal without inhering in any of the particulars that the universal is said-of. Aristotle's claim to the contrary at 2b1-3 seems to involve mistakenly treating inherence as a type of predication *simpliciter* of the type discussed in the *De Interpretatione* and *Prior Analytics* rather than as a type of *kath' hauto* predication of the kind discussed in the *Posterior Analytics.*

If something inheres in a universal or is predicated *kath' hauto$_2$** of a universal, then it could not have existed without belonging to that universal. Inherence and *kath' hauto$_2$** predication involve a kind of necessity. I have argued that universals are wholes with their instances as parts, and I tried to paint a picture above on which it is plausible to say that universals and particulars inherit each others predicates (at least where we have in mind predication *simpliciter.*) However, when we turn to *kath' hauto* predication, these sorts of inheritance fail. Inherence, however, is a type of *kath' hauto* predication, particulars do not inherit the *kath' hauto* predicates of the universals said-of them.

Section VIII.17: Inherence, Constitution, and Modality

If we think about the way that constitution interacts with modality, especially in the case of composite things that can survive a change in parts, we can make a couple of observations. In the following discussion about attributes belonging to parts and wholes, I mean to confine our attention to attributes that belong to a composite only by belonging to at least one of its parts. These are attributes for which the following whole-part principle is true:

> (WP) It is necessary that for all *x* and *y*, if *y* is composite then *x* belongs to *y* if and only if there is some *z* such that *z* is a part of *y* and *x* belongs to *z*.[68]

In what follows, I will once again talk about one thing's belonging to another of necessity*. It will be helpful to have a definition of this type of necessary belonging before us:

> (NB) For all *x* and *y*, *x* belongs of necessity* to *y*, if and only if *x* belongs to *y*, and it is necessary that for all *z*, *x* belongs to *z* only if either *z*=y or *z* is a part of *y*.[69]

Notice, that on this account, there can be cases in which an attribute belongs of necessity* to a composite, without there being any part of the composite to which the attribute belongs of necessity*. While the attribute in question will never exist without belonging to some part of the composite, it might belong to different parts of the composite in different situations. The situation with predication *simpliciter* and predication *kath' hauto₂** will be formally identical to the situation outlined. For something to be predicated *kath' hauto₂** of a universal, it must be predicated *simpliciter* of at least one appropriate particular in any possible situation in which it

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[68]   Where 'B*xy*' means '*x* belongs to *y*', 'C*y*' means '*y* is composite', and 'P*zy*' means '*z* is a part of *y*', $\Box \forall x \forall y (Cy \supset (Bxy \equiv \exists z(Pzy \,\&\, Bxz)))$. As I note above, I think that by confining ourselves to attributes for which (WP) is true, we have a stronger analogy to Aristotle's claims about predication *simpliciter*.

[69]   Where 'B*xy' means '*x* belongs of necessity to *y*', and 'B*xy*' means '*x* belongs to *y*': $\forall x \forall y (B^*xy \equiv \Box \forall z(Bxz \supset (Bxy \,\&\, (z{=}y \vee Pzy))))$. I am also assuming that whatever belongs to anything cannot exist without belonging to something.

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belongs to anything. Furthermore, what is predicated *kath' hauto₂** of a universal is never predicated *simpliciter* of anything other than that universal, a universal superordinate or subordinate to that universal, or a particular instance of that universal. However, it does not follow that the predicate belongs *kath' hauto₂** either to the subordinate universals or to any of the particulars. We might, therefore, take Aristotle's claim that *color* inheres in *body* only if it inheres in a particular body to involve a mistake about the way that constitution interacts with modality.

The things that are predicated *kath' hauto₂** of substantial universals are nonsubstantial universals.[70] Just as the substantial universals have primary substances as parts, the nonsubstantial universals have nonsubstantial particulars as parts. Furthermore, what is true of the nonsubstantial universals predicated of subjects is related to what is true of the non-substantial instances of these universals. No nonsubstantial universal can be predicated *simpliciter* of anything unless an appropriate nonsubstantial particular inheres in an appropriate particular substance. The universal *pallor* can be predicated *human*, if and only if at least some instance of *pallor* inheres in some particular human. The universal *pallor* can be predicated *kata pantos* of the universal *polar bear*, if and only if every polar bear has an instance of *pallor* inhering in it. On my view, it is also the case that the nonsubstantial universals are predicated *simpliciter* of their subjects *because* of the inherence relations that hold between particulars. Once we have specified all of the inherence relations between non-substantial and substantial particulars, the facts about predication *simpliciter* are fixed. However, not all the facts about inherence and *kath' hauto₂** predication between universals are fixed.

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[70] While I take non-substantial particulars to inhere in things and to belong to them *kath' hauto*, I am wary about saying that a particular is 'predicated' of anything.

For example, we can imagine a situation where the situation where all and only human beings have been, are, or ever will be pale. *Pallor* will belong *kata pantos* to *human*. Every particular instance of *pallor* will inhere in an individual human being. However, this will not be enough for *pallor* to inhere in *human*, because *pallor* will not belong of necessity to *human*.[71]

Inherence relations between universals cannot be reduced to inherence relations between the particulars composing those universals. The fact that one universal inheres in another is not identical to any fact about particulars.[72] Furthermore, we cannot give necessary and sufficient conditions for the holding of inherence relations between universals solely in terms of particulars.[73]

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[71] Furthermore, while each instance of *pallor* will belong *kath' hauto* to an instance of *human*, *pallor* will not belong *kath' hauto* to *human*. I take this to be the import of Aristotle's example at 74a16-17, "If there were no triangle besides isosceles, one might think that [having two right angles] belonged to it *qua* isosceles." Aristotle thinks that one would be incorrect to think this way.

[72] I do not even think that we can reduce claims about inherence relations between universals to claims about all actual and possible individuals. Even if we think that it is acceptable to use contemporary modal logic, and the corresponding possible worlds semantics, in talking about Aristotle, we should not be misled in trying to reduce Aristotle's modal talk into talk about *possibilia* in some kind of Lewisian way. Rather than thinking that possible worlds talk reveals the underlying structure of the truthmakers for claims about inherence and said-of relations between universals, Aristotle will take possible worlds claims to be made true by the holding of inherence and said of relations between particulars and universals. Inherence and said-of talk reveals the underlying structure of Aristotle's world more clearly than possible worlds talk. On the view that I endorse, the reason that it is true to say that it is impossible for any color to belong to something that is not a body, is because *color* inheres in *body*. The reason it is true to say that any possible human being is an animal is the fact that *animal* is said-of *human*.

Similarly the attempt to decompose *kath' hauto* predication into a non-modal predication relation (like predication *simpliciter*) and a modal operator should not mislead us into thinking that Aristotle takes there to be truthmakers for predication *simpliciter* claims other than the ones consisting in the holding of said-of and inherence relations between various universals and particulars. Aristotle wants to analyze predication *simpliciter* in terms of inherence and the said-of relation, rather than *vice versa*.

[73] We need to be careful here. What we cannot do is give a general formula like: for any universals *x* and *y*, *x* inheres in *y* if and only if there are certain particulars such that ___. This is not to say that the fact that an instance of *color* inheres in an instance of *body* fails to be logically sufficient for *color's* inhering in *body*. Aristotle takes it to be necessary that if *color* exists, then *color* inheres in *body*, and any fact at all about particulars is sufficient for a necessary fact. The fact that an instance of *color* inheres in anything entails that an instance of *color* exists. The fact that an instance of *color* exists entails that *color* exists, which in turn entails that *color* inheres in *body*. So the inherence of a particular color inheres in a particular body is sufficient for *color's* inhering in *body*. Nevertheless, Aristotle takes the fact that (if it exists, then) *color* inheres in *body* to be a fact in addition to facts about particulars,

Nevertheless, I take the inherence of one universal in another in any possible situation to require realization by the holding of inherence relations between appropriate particulars in that situation. For example, for it to be true at any time to claim that *color* inheres in *body*, it must also be true at that time that there is at least one particular body, that there is at least one nonsubstantial particular instance of color, and that all the nonsubstantial particular colors inhere in particular bodies. Aristotle's mistake at 2b1-3 is to hold that *color* cannot inhere in body without *itself* inhering in body. However, he would have been correct to hold that *color* cannot inhere in *body* without having all of its instances inhere in instances of body.

Furthermore, the latter claim seems to be enough to secure what Aristotle seems to want to conclude in 2a34ff. Primary substances will be the ultimate subjects for all other entities. Furthermore, from the claim that any other entity exists, we will be able to infer that a primary substance exists. It follows that if primary substances did not exist, then none of the other things would exist.

In claiming that primary substances are primary, however, Aristotle seems to intend more than simply that the existence of any other sort of entity entails the existence of at least one primary substance. For it seems equally true to claim that the existence of any sort of entity entails the existence of at least one secondary substance, and entails the existence of both universal and particular accidents. It is, however, difficult to state precisely the way in which Aristotle takes primary substances to be prior to these other sorts of things. I turn to this issue in the next chapter. I argue that Aristotle takes primary substances to be primary by being "causes of being" for all other entities. Furthermore, Aristotle takes primary substances to be the only entities

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even if it is a necessary fact. We might be able to capture the distinction here by specifying sufficiency using a version of relevance logic.

that are non-relational, while he takes other entities to be essentially relational. I turn to this latter issue in chapter 10.

CHAPTER 9

PRIMARY SUBSTANCES AND ONTOLOGICAL PRIORITY

Section 9.1: Introduction

In Chapter 8, I argued that, even without his problematic claim that all entities are either said-of or inherent in primary substances, Aristotle is justified in claiming that primary substances are ultimate subjects for all other things. He is also justified in his claim at 2b5-6 that "If the primary substances did not exist, then it would be impossible for any of the other things to exist." Whether Aristotle is justified in taking the truth of this claim to ensure the "primacy" of primary substances, however, is open to question. For primary substances to count as primary would require that they be prior to other sorts of entity. However, Aristotle doesn't clearly explain what sort of priority primary substances are supposed to have to other types of entity. To make matters worse, on the explicit characterizations of priority given in the *Categories*, primary substances seem to be as best simultaneous with and, at worse, posterior to other sorts of entity.

In this chapter, I first examine some of Aristotle's statements about substance in *Categories* 5 (Section 9.2). I argue that Aristotle implicitly recognizes a kind of priority—we can call it "priority in substance"—that primary substances have with respect to secondary substances, and that substances have with respect to non-substances. Aristotle closely connects being prior in substance to a thing with being a subject for that thing. Furthermore, Aristotle takes the fact that primary substances are subjects for other things to entail that nothing else could exist, if primary substances did not exist.

It is tempting to think that Aristotle equates priority in substance with this kind of existential dependence. Succumbing to this temptation, however, turns out to be

problematic, since primary substances seem to be existentially dependent on the very things to which they are prior in substance.

I next turn to Aristotle's discussion of priority in *Categories* 12-13 (Section 9.3). Here I will focus primarily on two varieties of priority recognized by Aristotle. At 14a29-35, Aristotle defines priority with respect to implication of existence. One entity is prior to another in this way if and only if the existence of the second entails the existence of the first, but the existence of the first does not entail the existence of the second. This notion of priority conflicts with the sort of priority in substance recognized in *Categories* 5. First of all, primary substance as a type seems to be simultaneous with secondary substance and with both particular and universal nonsubstance as types. If we take primary substances individually, matters are worse. The existence of any primary substance implies the existence of its species, while the converse is not true. Species, which are secondary substances, turn out to be prior in implication of existence to primary substances. Similarly, species are posterior to their genera with respect to implication of existence, but prior to their genera in substance.

At 14b9-23, Aristotle recognizes an additional type of priority. He notes that things sometimes reciprocate with respect to the implication of existence, but we take one to be prior to the other because the first is a cause of being for the second. Given this observation, Aristotle, in the course of his discussion of simultaneity by nature in *Categories* 13, defines a type of priority that we can call "priority in nature". One thing is prior in nature to another if and only if either the first is prior in implication to the second, or the first and the second reciprocate with respect to implication of existence but the is a cause of being for the second while the converse is not the case.

I argue that Aristotle's notion of priority in nature gets right the case in which primary substance and other sorts of entities are compared as types, since primary substances are causes of being for other things while the converse is not the case.

However, this modification still yields the wrong priority result when individual primary substances are compared to their species, or individual species are compared to their genera.

In the last section of the chapter (Section 9.4), I observe that one thing can be a cause of being for another even in a case where the second is prior in implication of existence to the first. Aristotle, therefore, has room for a sort of priority defined solely in terms of being a cause of being for a thing—a kind of priority that I will call "ontocausal priority". I argue that individual primary substances are ontocausally prior to their species and genera, and that the ontocausal priority of primary substances is closely related to their being subjects for other things. Furthermore, I argue that ontocausal priority gives us a better model of ontological priority than the other sorts of priority defined by Aristotle. I end the chapter with a brief discussion of possible reasons for Aristotle's failure to recognize ontocausal priority, and briefly compare some of Aristotle's views about ontological priority with Plato's.

Section 9.2: *Priority in Substance in Categories 5*

Aristotle's central task in *Categories* 5 is to describe the nature of substance and to differentiate substance from other entities. Aristotle recognizes two types of substance: primary substances (*prôtai ousiai*) and secondary substances (*deuterai ousiai*). Primary substances, of which individual living things are the paradigmatic cases, are neither said-of nor inherent in any other entity. Furthermore, primary substances are subjects for all other things.[1] Secondary substances, of which the species and genera of primary substances are paradigmatic examples, are said-of primary substances but are not inherent in any entities.

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[1] As we observed in the last chapter, Aristotle takes this claim to mean that primary substances are directly the subjects for all other things. Taking the claim in this way turns out to be problematic. However, Aristotle need accept only the weaker claim that primary substances are ultimate subjects for other things. I will often call one entity a subject for another when it is an ultimate rather than a direct subject.

At 2a11ff, Aristotle tells us that primary substances are "substances most strictly, primarily and most of all."[2] In addition at 2b7ff, Aristotle twice claims that primary substances are substances 'most of all' or 'most strictly', and that the species is said to be 'more a substance' than the genus. Three observations are in order. First, Aristotle calls some substances 'primary' and others 'secondary', and this terminology implies some ordering in respect of degree of substantiality. Second, he uses the superlatives 'most strictly' (*kuriôtata*), 'primarily' (*prôtôs*), and 'most of all' (*malista*), to talk about the way in which primary substances are said to be substances. Finally he uses comparatives in claiming that species is 'more a substance' than the genus, and that it is closer to the primary substance. These facts all suggest that Aristotle has in mind an ordering of degree of substantiality, and a corresponding notion of priority which we might call "priority in substance".[3]

Aristotle strongly connects primacy in respect of substance with being a subject for other things. At 2a34, 2b4, 2b15 and 2b39, primary substances are said to

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[2]   "…κυριώτατά τε καὶ πρώτως καὶ μάλιστα…"

[3]   Morrison, "The Evidence for Degrees of Being in Aristotle" (1987), points to similar evidence to show that Aristotle accepts degrees of being in the *Categories*. I agree with Morrison's claim that Aristotle accepts degrees of being. However, I think that Aristotle subscribes only to what Morrison calls the 'ordering interpretation' rather than to the 'intensity interpretation' of degrees of being. Furthermore, I will argue later that priority in being can be understood causally. Priority in substance or being is a matter of being some kind of cause of being for another thing.

Aristotle does not use a phrase, such as '*proteros kata ousian*' or '*proteros tê ousiê*', which would be rendered 'priority in substance' in the *Categories*. However, I think that there is ample evidence for reading this relation into the discussion in chapter 5. In addition to the evidence mentioned above, we can observe that Aristotle says that the species is nearer the primary substance, and is therefore more a substance, he is speaking in a way that suggests his analysis of priority in *Metaphysics* Δ.11. Aristotle there analyzes priority in terms of distance from a point of origin. It is natural to take the strictest substance, i.e. primary substance, as a point of origin in terms of which a priority ordering is given, and to see *Categories* 5 as describing such a priority ordering.

In *Metaphysics* Δ, Aristotle *does* use the phrase 'prior in nature and substance' ('*proteros kata phusin kai ousian*') (1019a2). Furthermore, he seems to equate priority according to substance with priority according to nature in that passage, and also claims that the subject and substance are prior in this way. However, we will see that Aristotle's characterization of priority by nature (*proteros phusei*) in *Cat* 12-13 differs in crucial ways from his characterization of *proteros kata phusin* in Δ. A central question, which is beyond the scope of this work, is how we ought to treat Aristotle's different treatments of priority in different texts. For an overview of the central texts, and a discussion of the assorted notions of priority in Aristotle see John Cleary, *Aristotle on the Many Senses of Priority* (1988).

be subjects for all other things. Aristotle argues from the fact that primary substances are subjects for everything to the conclusion that they are substances most of all:

> Furthermore, the primary substances are said to be substances most of all, because they are subjects for all other things, and all other things are either said-of them or are in them (2b15-17).[4]

Aristotle also argues that the species and genera are the only substances besides primary substances based on the fact that they are subjects for all things other than primary substances and themselves:

> It is fitting that after the primary substances, among other things only the species and genera are called secondary substances…Further, the primary substances are said to be substance most strictly because they are the subjects for all other things. But just as primary substances hold toward all the other things, so the species and genera of primary substances hold toward all the remaining things. For all the remaining things are predicated of these. For if you call some particular man grammatical, you also call man and animal grammatical. And similarly in other cases. (2b26-27…2b37-3a6).[5]

Finally, from the fact that the species is a subject for the genus while the converse is not true, Aristotle infers that the species is more of a substance than the genus:

> As the primary substances hold to the other things, so also the species holds toward the genus. For the species is a subject for the genus. For the genera are predicated concerning the species, but the species are not reciprocally predicated of the genera. So that, among these, the species is more a substance than the genus (2b17-22).[6]

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[4]   "ἔτι αἱ πρῶται οὐσίαι διὰ τὸ τοῖς ἄλλοις ἅπασιν ὑποκεῖσθαι καὶ πάντα τὰ ἄλλα κατὰ τούτων κατηγορεῖσθαι ἢν ταύταις εἶναι διὰ τοῦτο μάλιστα οὐσίαι λέγονται (2b15-17)." Note that this is yet another passage where Aristotle explicitly claims that primary substances are direct subjects for all other things.

[5]   "Εἰκότως δὲ μετὰ τὰς πρώτας οὐσίας μόνα τῶν ἄλλων τὰ εἴδη καὶ τὰ γένη δεύτεραι οὐσίαι λέγονται…ἔτι αἱ πρῶται οὐσίαι διὰ τὸ τοῖς ἄλλοις ἅπασιν ὑποκεῖσθαι κυριώτατα οὐσίαι λέγονται· ὡς δέ γε αἱ πρῶται οὐσίαι πρὸς τὰ ἄλλα πάντα ἔχουσιν, οὕτω τὰ εἴδη καὶ τὰ γένη τῶν πρώτων οὐσιῶν πρὸς τὰ λοιπὰ πάντα ἔχει· κατὰ τούτων γὰρ πάντα τὰ λοιπὰ κατηγορεῖται· τὸν γὰρ τινὰ ἄνθρωπον ἐρεῖς γραμματικόν, οὐκοῦν καὶ ἄνθρωπον καὶ ζῷον γραμματικὸν ἐρεῖς· ὡσαύτως δὲ καὶ ἐπὶ τῶν ἄλλων (2b26-27…2b37-3a6)."

[6]   "ὡς δέ γε αἱ πρῶται οὐσίαι πρὸς τὰ ἄλλα ἔχουσιν, οὕτω καὶ τὸ εἶδος πρὸς τὸ γένος ἔχει· – ὑπόκειται γὰρ τὸ εἶδος τῷ γένει· τὰ μὲν γὰρ γένη κατὰ τῶν εἰδῶν κατηγορεῖται, τὰ δὲ εἴδη κατὰ τῶν γενῶν οὐκ ἀντιστρέφει – ὥστε καὶ ἐκτούτων τὸ εἶδος τοῦ γένους μᾶλλον οὐσία (2b17-22)." A more literal translation of lines 20-21 might be, " For the genera are predicated of the

While Aristotle never uses the phrase "priority in substance" in the *Categories*, it is reasonable on the basis of the passages above to attribute to him a concept of priority in substance. Furthermore, he conceives of priority in substance in terms of one thing's being a subject for another. As a first pass, we might define priority in substance as follows:

> **(PS)** For all entities, x and y, x is prior in substance to y if and only if x is a subject for y, and y is not a subject for x.[7]

The variables in (PS) should be taken to range over primary substances, secondary substances, nonsubstantial particulars and nonsubstantial universals. We should understand priority in substance defined in (PS) as a strict partial ordering, a relation which is transitive, irreflexive and asymmetrical. (PS) allows us to make pair-wise comparisons between entities as follows. Each primary substance will be prior in substance to its species and genera, to the nonsubstantial particulars inhering in it, and to the nonsubstantial universals said-of those nonsubstantial particulars. Each substantial species will be prior in substance to its genera, and to any of the nonsubstantial entities posterior in substance to any primary substance in the species. Each substantial genus will be posterior in substance to each of its species, and prior in substance to any of the nonsubstantial entities posterior to any of its species.

The priority relation defined by (PS) has a shortcoming that needs to be addressed. (PS) only allows the priority in substance relation to hold between two entities in cases where one of those entities is a subject for the other. However, Aristotle claims that two primary substances, for example a man and an ox, are

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species, but the species do not reciprocate concerning the genera." It is clear, however, that Aristotle is claiming that the species are do not reciprocate in respect of being predicated of the genera.

[7]   By 'is a subject for' I intend ultimate subjecthood, on which primary substances are subjects for nonsubstantial universals. (PS) has the *prima facie* odd-sounding result that nonsubstantial particulars will be prior in substance to nonsubstantial universals. I will not say much about the priority of nonsubstantial particulars to nonsubstantial universals in what follows. We could stipulate that any entity prior in substance to any thing at all must be a substance. Nevertheless, I think that Aristotle does take nonsubstantial particulars to be ontologically prior to nonsubstantial universals in a way similar to the way in which he takes primary substances to be prior to secondary substances.

equally substances, and that two species, e.g. *human* and *horse*, are equally substances.[8] Furthermore, it seems that Aristotle wants to be able to say that those secondary substances that are species but not genera are prior in substance to those secondary substances that are also genera.[9]

In order to deal with this problem, we might replace (PS) with the following series of principles (PS*)(i)-(v).

(PS*) (i) For all entities, *x* and *y*, if *x* is a subject for *y* and *y* is not a subject for *x*, then *x* is prior in substance to *y*.
(ii) For all entities, *x* and *y*, if *x* and *y* are both primary substances, then *x* is simultaneous in substance with *y*.
(iii) For all entities, *x* and *y*, if *x* and *y* are immediately said-of entities which are simultaneous in substance with each other, then *x* is simultaneous in substance with *y*.
(iv) For all entities, *x* and *y*, if *y* is simultaneous in substance with something that is immediately said-of *x*, then *x* is prior in substance to *y*.
(v) For all entities, *x* and *y* and *z*, if *x* is prior in substance to *y*, and *y* is simultaneous in substance with *z*, then *x* is prior in substance to *z*.

Given (PS*), every primary substance is prior in substance to every secondary substance. Furthermore, immediate species of primary substances are prior in substance to any genus of any immediate species, and any lower genus is prior in substance to any higher genus.[10] Furthermore, each substance is prior in substance to

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[8]   Strictly speaking, at 2b22ff, Aristotle just denies that either is more of a substance than the other. If we allow that one thing is not more a substance than another in cases where the two can't be compared at all with respect to substantial priority, then we could leave (PS) as it stands. However, I think that Aristotle wants to count things in each of these cases as comparable in respect of substantial priority. They will be simultaneous in substance, just as he later claims, in *Categories* 13, that we should count all coordinate species under the same genus as simultaneous in nature.

[9]   I take this to be an implicature of Aristotle's restricting the claim that one species is no more a substance than another to cases where neither is a genus (2b22ff). When one *is* a genus and the other is not, the first will be posterior in substance to the second even when neither is a subject for the other.

[10]   We can take the number of times that we have to use the immediately said-of relation to get from a secondary substance to a primary substance as a measure of distance from primary substance. All species are equally close to primary substance, and are each closer to primary substance than any other genus.

any non-substance. (PS*) seems to yield the pair-wise priority in substance comparisons that Aristotle endorses.

In the last chapter, we looked at Aristotle's argument that nothing could exist without primary substance:

> So all of the other things are either said-of the primary substances or are in them as subjects. Therefore, if the primary substances did not exist, it would be impossible for any of the other things to exist (2b5-6).[11]

Aristotle infers, from the fact that primary substances are subjects for other things, that it would be impossible for other things to exist if primary substances did not exist.[12] As I pointed out in Chapter 8, Aristotle's claim that all things are either said-of or inherent in primary substances is too strong. In what follows, I will take Aristotle to argue from the weaker claim that every other entity has a primary substance as an ultimate subject.

Aristotle makes a valid inference in this passage, only if he takes his claim that all other things have primary substances as subjects to be a claim that has modal force. In other words, he is not simply pointing out that as a matter of fact every entity that is not a primary substance actually has at least one primary substance as a subject. Rather, he is claiming that as a matter of necessity every entity that is not a primary substance must have a primary substance as a subject. If any possible situation in which something other than primary substances exists is also a situation in which those things have a primary substance as a subject, then any possible situation in which there anything other than a primary substance exists is also a situation in which

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[11]   ὥστε τὰ ἄλλα πάντα ἤτοι καθ' ὑποκειμένων τῶν πρώτων οὐσιῶν λέγεται ἢ ἐν ὑποκειμέναις αὐταῖς ἐστίν. μὴ οὐσῶν οὖν τῶν πρώτων οὐσιῶν ἀδύνατον τῶν ἄλλων τι εἶναι· (2b5-6)

[12]   At 2b5, the particle '*oun*' marks that an inference is being made. At 2b6b (which is bracketed in the Minio-Paluello text), the particle '*hôste*' marks the inference.

a primary substance exists. So, if there were no primary substances there would be nothing else either.

What we have here is a kind of type-type modal existential dependence. Other entities taken as types, secondary substances, nonsubstantial particulars, and nonsubstantial universals, are existentially dependent on primary substances as a type. No type of entity could have any tokens unless there were tokens of the primary substance type. Aristotle takes the fact that primary substances are ultimate subjects to explain the type-type existential dependence of other entities on primary substance. Furthermore, Aristotle seems to take this type-type modal existential dependence of all the other types on primary substance as an indicator of the special ontological status of primary substances.[13] I think that the very term that Aristotle uses for primary substance indicates that they are take to have a special *ontological* status. 'Primary substance' is a translation of Aristotle's '*prôta ousia*'. '*Ousia*' is the feminine singular form of the present active participle of the verb 'to be' ('*einai*'), and is often translate 'substance'. When Aristotle divides the beings that exist in the universe into four classes at 1a20, he uses the neuter plural form of the participle of '*einai*'. Nevertheless, in saying that something is a primary *ousia*, it seems to me that Aristotle indicates that it is somehow prior as an entity or being. Substances seem to be ontologically prior to other things, and a large part of my task in this chapter is to characterize what this ontological priority consists in.

However, Aristotle seems mistaken to think that the considerations laid out in *Categories* 5 secure any kind of privileged ontological status for primary substance taken as a type—for, given some plausible assumptions, every type is modally existentially dependent on every other type. Given the fact that every primary

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[13] At the very least, Aristotle neglects to mention that it is equally true to say that primary substance as a type is modally existentially dependent on each of the other types of entity.

substance must be a member of some species and genus, if there were no secondary substances, there would be no primary substances. Furthermore, given the fact that no primary substance could exist without having some accidents, were there to be no nonsubstantial particulars or universals, there would be no primary substances. Related considerations hold in the other pair-wise comparisons of types of entity.

As we see when we turn to Aristotle's discussion of priority in *Categories* 12-13, the problem becomes more acute when we consider token primary substances and their token species and genera. According to the analyses of priority discussed by Aristotle in these chapters, each individual substance turns out to be *posterior* to its species and genus.

Section 9.2: Priority in Categories 12-13

Aristotle discusses various types of priority and simultaneity in *Categories* 12-13 (14a26-15a12). In *Categories* 12, Aristotle initially distinguishes four types of priority: priority in time, priority in implication of existence, priority according to an order, and priority in value. Some of Aristotle's statements about priority are quite straightforward and have little bearing on the present discussion. For example, Aristotle claims we talk about priority most strictly in relation to time, and he tells us one object is prior to another in time if and only if the first is older than the second. The least proper sort of priority is priority in value, where one object is prior in value to another for a subject if and only if it more loved and valued by that subject.[14] We can take priority in time and value as follows. I will say little more about these types of priority.

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[14]   I take Aristotle's claims here to be a claim about the most and least natural uses of the term 'prior'. When told that one thing or event is 'prior' to another without any qualification of the type of priority, we most naturally assume that temporal priority is at issue. Similarly, it is least natural to take such a claim to be a claim about value. I do not think that Aristotle is trying to tell us that priority in value is somehow less real than priority in time.

(PT) For all entities and events, *x* and *y*, *x* is prior in time to *y* iff x exists/occurs before y.

(PV) For all entities, *x* and *y*, and all agents, *z*, x is prior in value to *y* to *z* iff *z* values *x* more than *z* values *y*.

It is somewhat less clear what Aristotle intends in talking about 'priority according to an order' ('*proteros kata tina taxin*'). Aristotle illustrates this sort of priority by pointing to the examples of the demonstrative sciences and speeches. In the demonstrative sciences the elements or fundamental principles (*ta stoicheia*) are prior in order to the derived propositions (*ta diagrammata*). In grammar the phonemes (*ta stoicheia*) are prior in order to the syllables. And in speeches the introduction is prior in order to the statement of the case.

It is difficult to see what sort of priority Aristotle is talking about in each of these examples, or to find one single priority relation common to these three examples. Perhaps Aristotle's idea is that whenever there is a proper way to arrange things, it follows that there are priority relations between entities in the arrangement. In the sciences, we need the fundamental principles in order to demonstrate the derived propositions, and the elements seem to be prior in proof or knowledge to the propositions. Aristotle might be referring to the order of deduction or justification within a demonstrative science. Certain propositions are elements and the rest of the propositions are to be deduced from these. One proposition will be prior to another if the first shows up in a correct proof of the second.[15] Perhaps we also need to learn the elements in order to learn the propositions, and the elements are prior in the order of teaching.

The phonemes are parts of the syllables, and our ability to speak a syllable presupposes our ability to speak the phonemes. Phonemes seem to be prior in order to

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[15]   We might think of an Aristotelian science as a set of theorems that is partially ordered by a *properly follows from* relation, where there are objective facts about which propositions count as deductively prior.

syllables by being more basic constituents. The introduction of a speech seems to come before the laying out of the case in time. Furthermore, in the laying out of the case, a speaker might presuppose that the listeners have heard the introduction. This might constitute a certain kind of narrative priority of the introduction.

I suggest that we see priority according to an order as a generic form of priority, and that each *taxis* yields its own priority relation. Whenever there is a *taxis*, there is a proper way to arrange objects, and this proper arrangement yields a priority ordering among the objects in the *taxis*. We might think of a *taxis* as a partial order defined by a domain and a relation. One thing is prior to another according to a given *taxis*, if and only if the first bears the ordering relation to the second in the right way. Schematically we get:

> **(PKT)** For all entities x and y, and all arrangements z, x is prior to y according to z, if and only if x and y are in the domain of z, **R** is the ordering relation associated with z, and **R**xy.

On this way of understanding what it is for one thing to be prior to another with respect to an arrangement, priority with respect to an arrangement seems to be a generic form of priority.[16] All other types of priority outlined in this chapter seem to be specific kinds of priority with respect to an arrangement.[17] Furthermore, we can

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[16]   In the *Metaphysics* Δ.11, Aristotle takes distance from a point of origin as a root sense of priority. This root sense seems close to the type of priority that I take Aristotle to be getting at with priority according to a *taxis* in the *Categories*. For further discussion of some of the connections and differences between the *Categories* and *Metaphysics* passages, see Cleary (1988).

[17]   Take grammar as an example. We might have a domain containing all the letters, syllables, words, and sentences, and an partial ordering relation on which x is prior to y iff x is a part of y. Each letter is prior to the syllables of which it is a part, and each syllable is prior to the words of which it is a part, etc. If we want to hold that every phoneme is prior to every syllable, then we will have to make alterations to the ordering relation similar to those suggested in the last section for priority in substance. In the case of speeches, the domain will be the parts of a speech, and the ordering relation will be one on which what comes earlier in the course of exposition is prior to what comes later.

See also the discussion of priority *kata taxin* at *Metaphysics* Δ.11 1018b26ff. Aristotle obviously thinks that the type of priority involved in his discussion there is very broad. Certain members of a chorus are prior to others by virtue of their distance from the chorus-leader. Certain lyre strings are prior to others by virtue of their distance from the middle lyre string. In the *Metaphysics* Aristotle further tells us that a *taxis* will contain a certain fixed item such that priority according to the *taxis* will be a matter of distance from the fixed item. 'Distance' here should be understood as applying across a number of dimensions. The formal story here is a bit more complicated. We will have a domain

take the relation of priority in substance discussed in the previous section as a type of priority according to an arrangement. I turn now to Aristotle's discussions of priority in implication of existence, and simultaneity and priority in nature.

At 14a29, Aristotle defines the second of his four senses of priority. There are a number of issues that need to be worked through in figuring out how best to construe this passage. I will give a translation that I take to be neutral with respect to these issues, though very awkward. I will then turn to some of the issues, and make some suggestions about how to understand the passage.

> [T]hat which does not reciprocate concerning the implication of existence [is prior]. For example one is prior to two, since there being two, it follows straightway that there is one, but there being one it is not necessary for two to be, so that the implication of the being of the remainder does not reciprocate from the one; and things seem to be prior from which the implication of existence does not reciprocate (14a29-35).[18]

The word translated as 'implication' is '*akolouthêsis*', which is derived from the verb '*akolouthein*' meaning 'to follow'. The grammatical subjects and objects of '*akolouthein*' are usually terms in Aristotle's logic.[19] For example, 'animal' is said to follow from 'human'.[20] At a minimum, where 'A' and 'B' are terms, 'A follows from B' is true only if for all terms, 'C', 'C belongs to B' is true only if 'C belongs to A' is also true. So far, I am only taking '*akolouthêsis*' to require the truth of the following universally quantified material conditional.

(IM1) For all predicates, A and B, A follows from B only if $\forall x(Bx \supset Ax)$.[21]

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of objects, with one element designated as an origin. Priority is then a matter of distance along some dimension from that object.

[18] "δεύτερον δὲ τὸ μὴ ἀντιστρέφον κατὰ τὴν τοῦ εἶναι ἀκολούθησιν, οἷον τὸ ἓν τῶν δύο πρότερον· δυεῖν μὲν γὰρ ὄντων ἀκολουθεῖ εὐθὺς τὸ ἓν εἶναι, ἑνὸς δὲ ὄντος οὐκ ἀναγκαῖον δύο εἶναι, ὥστε οὐκ ἀντιστρέφει ἀπὸ τοῦ ἑνὸς ἡ ἀκολούθησις τοῦ εἶναι τὸ λοιπόν, πρότερον δὲ δοκεῖ τὸ τοιοῦτον εἶναι ἀφ' οὗ μὴ ἀντιστρέφει ἡ τοῦ εἶναι ἀκολούθησις (14a29-35)."

[19] There are numerous uses of '*akolouthein*' and '*akolouthêsis*' in the *Prior Analytics* and *Topics*. See *Apr* I.27-28 (43a20-45b23), I.46 (52b14ff), and *Topics* II.8 (133b15ff).

[20] *Prior Analytics* (43a20ff); *Topics* II.8 (113b19); *Sophistical Refutations* 28 (181a24).

[21] Where 'Ax' means that the predicate indicated by 'A' belongs to the individual *x*. In what follows, I turn Aristotle's terms into first-order predicates, and take quantifiers to range over individuals

However, Aristotle seems to take '*akolouthêsis*' to have some kind of modal force. The truth of 'Animal follows from human,' seems to involve the fact that there couldn't be something that was a man unless it was also an animal. So it seems that Aristotle will also accept (IM2).

> (IM2) For all predicates, A and B, A follows from B, only if
> it is necessary that ∀x(Bx ⊃ Ax).[22]

(IM2) tells us that A follows from B only it is not possible for there to be a thing to which B belongs unless it is also a thing to which B belongs. Whether Aristotle would accept the strengthening of (IM2) to (IM3) is a difficult question.

> (IM3) For all predicates, A and B, A follows from B if and only if
> it is necessary that ∀x(Bx ⊃ Ax).

The difficulty concerns the possibility of necessary and impossible predicates. If (IM3) is true then a predicate that belongs of necessity to all objects follows from any predicate at all, and every predicate follows from an impossible predicate. If such claims are problematic, then we need to add some sort of relevance constraints to our definitions in order to deal with them. While the issue seems to be of little importance in dealing with predicate-implication, I think that the issue becomes a bit more pressing when we turn to talk about the implication of existence.

In talking about the 'implication of existence' ('*tou einai akolouthêsis*') in the *Categories*, Aristotle is not talking about a relationship between terms or their

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subjects. Notice that "∀x(Bx ⊃ Ax)," is equivalent to the normal way of translating Aristotle's universal positive claim "A belongs to all B," into first-order logic. Furthermore, I do not distinguish use and mention, unless the context is ambiguous.

[22]   Whether "Necessarily ∀x(Bx ⊃ Ax)," is the right way to represent Aristotle's modal claim "A necessarily belongs to all B," is open to debate. In general, I think that Aristotle conceives of modality in terms of copula-operators and takes necessity to modify the way in which one thing belongs to another. See Patterson *Aristotle's Modal Logic* (1995) for a defense of this view. It seems that Aristotle's modal claim, "A necessarily belongs to all B," is closer to the *de re* claim "(∀x□(Bx ⊃ Ax)" than to the *de dicto* "□∀x(Bx⊃Ax)." In any case what I am concerned to show in the present case is that Aristotle does not take it to be possible to have a thing to which B belongs unless it is also a thing to which A belongs. The *de dicto* claim is closer to what I want, even if it is not a claim that Aristotle can express in his own modal syllogistic.

referents of the sort discussed in (IM1)-(IM3). Rather, it is easiest to express what Aristotle means by '*tou einai akolouthêsis*' as a relationship between certain types of propositions, states of affairs, or facts. The existence of one entity follows from the existence of another, if and only if the proposition that the first exists entails the proposition the second exists.[23] Given the observation above that following or implication are supposed to have some modal force, it seems that Aristotle will accept (IB1)

> **(IB1)** For all entities, *x* and *y,* the existence of *x* follows from the existence of *y* only if it is necessary that if *y* exists then *x* exists.

Whether Aristotle thinks that (IB1) can be strengthened to (IB2) depends on whether he takes the sort of implication involved to be subject to relevance constraints.

> **(IB2)** For all entities, *x* and *y,* the existence of *x* follows from the existence of *y*, if and only if it is necessary that if *y* exists then *x* exists.

Aristotle sometimes talks as though his species and genera are eternal and necessary existents. However, he also seems to think that the existence of a species implies the existence of its genus, but that the converse claim is false. Aristotle could not hold that species and genera are necessary existents, hold that they stand in asymmetrical implication relations, and hold that (IB2) is true. In what follows, I will assume that Aristotle thinks that we can make sense out of talk about possible situations in which a species or genus does not exist, but that there is no possible situation in which a species exists but its superordinate genera do not.[24] Furthermore, I will take Aristotle to accept (IB2), and I will take the implication of existence as a relation between states of affairs or facts.

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[23]   I take us to be able to state the same principle in terms of facts or states of affairs. The fact that one exists necessitates that the other exists, or the existence of one necessitates the existence of the other.

[24]   I think that even if Aristotle does think that genera and species are necessary existents, he might be able to have a fictionalist account of asymmetrical implication of existence along the lines that I suggest.

There is still an apparent ambiguity in 14a29-14a35 that needs to be addressed. Aristotle's claims in the example about one and two admit of two different readings.[25] On the one hand, we might take Aristotle to be talking about the existence of the entities named by 'one' and 'two', where these are numbers. He will then be telling us that there are no possible situations in which two exists but one does not, while there are situations in which one exists but two does not.[26]

On the other hand we might take Aristotle to be making a claim about the implication relations between states of affairs involving the existence of two things and states of affairs involving the existence of a single thing. Aristotle will then be taken to be pointing out that the fact that there are two things always necessitates that there is one thing, while the converse is not the case.

In fact, I think that the ambiguity here is merely apparent, and that on Aristotle's view the two ways of taking the passage amount to the same thing. Considered as terms referring to entities, 'one' and 'two' will not name some sort of substance, but will name accidents in the category of quantity. The state of affairs, there being two things, consists in the inherence of the entity indicated by 'two' in a subject. The existence of a nonsubstantial entity always goes together with the obtaining of the state of affairs consisting in that entity's inhering in some subject.

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25   For example, we might translate "δυεῖν μὲν γὰρ ὄντων ἀκολουθεῖ εὐθὺς τὸ ἓν εἶναι, ἑνὸς δὲ ὄντος οὐκ ἀναγκαῖον δύο εἶναι…" in two ways. First, "For if two exists, it follows straightway that one exists, but if one exists it is not necessary for two to exist…" Second, "For if there are two (things), it follows straightway that there is one, but if there is one it is not necessary that there be two…" Cleary (1988) seems to prefer the first way of taking the passage, while Ackrill (1963) opts for the second.

26   The sort of implication involved here cannot be adequately captured by (IB2), if we take numbers to be necessary existents. Cleary (1988) suggests that we take Aristotle to be making the point that the existence of the number two implies a principle of numbering, and that one is this principle of numbering. It seems possible to hold that one is principle of the relevant type, even if all the other numbers exist in every possible situation where one does. If we do this, however, we will need to introduce a different sort of implication relation than modal-existential implication. I discuss some of these issues in chapter 10.

In light of the above considerations, I translate the passage at 14a29-35 as follows:

> Secondly, what does not reciprocate concerning the implication of existence is prior. For example, one is prior to two, since if two exists it follows straightway that one exists, but if one exists it is not necessary for two to exist, so that the implication of the existence of the rest does not reciprocate from the one, and things seem to be prior from which the implication of existence does not reciprocate. (14a29-35)

Furthermore, we can define Aristotle's relation of priority in implication of existence as follows:

> **(PI)** For all entities, x and y, x is prior concerning the implication of existence to y, if and only if it is necessary that if y exists then x exists, and it is possible that x exists and y does not exist.

Furthermore, I take (PI) to be equivalent to the claim that there is no possible situation in which y exists but x does not exist, and there is a possible situation in which x exists but y does not exist.

In the example about one and two, Aristotle asserts that it is impossible for two to exist unless one also exists, while it is possible for one to exist even if two does not exist. A possible argument in support of Aristotle's claim would proceed in the following way. From the claim that two, a nonsubstantial entity, exists it follows that some subject of two exists. However, whatever is a possible subject of two must consist of distinct entities, each of which will be a subject for one. So whenever the quantity named by 'two' exists, so does that named by 'one'.[27] On the other hand, in a possible situation in which there is a single primary substance, there will be a subject for one, but there will be no subject for two. In such a world one, but not two, will exist.

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[27]   We will see in a moment that, on this way of taking 14a29-35, Aristotle's statements about the truth of a sentence and the existence of a man can be taken in a way similar to the way in which we take the example about one and two.

Priority in implication of existence initially seems to have a good claim on being a type of ontological priority. Furthermore, priority in implication of existence seems to be closely related to Aristotle's claim that if primary substance did not exist, nothing else would exist. We might think that priority in implication of existence will provide us with an analysis of the way in which primary substances are prior as substances or beings to all other things.

This view finds further support in *Metaphysics* Δ.11 when Aristotle discusses a priority relation, which seems to be just like priority in implication of existence as defined in (PI), and he calls this relation "priority according to nature and substance":

> Things are called prior and posterior in this way [the way previously talked about], but those things are prior in nature and substance which can exist without other things while the others cannot exist without them—Plato used this distinction (1019a1-4).[28]

In this passage, Aristotle defines a type of priority called 'priority in nature and substance' (*proteros kata phusin kai ousian*) in terms of asymmetrical existential dependence, which is exactly the way that he defines priority in implication of existence. Aristotle also goes on to claim that the subject and substance are prior to other things in nature and substance. However, Aristotle's claim that subjects are prior in this way is problematic. Priority in implication turns out to be the wrong place to look for an account of priority in substance, if primary substances are supposed to be ontologically fundamental.

First of all, we should note that 'primary substance', 'secondary substance', 'nonsubstantial particular', and 'nonsubstantial universal' do not name entities. Rather 'primary substance', 'secondary substance', 'nonsubstantial particular', and 'nonsubstantial universal' allow us to talk about four very general types of entity,

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[28]   τὰ μὲν δὴ οὕτω λέγεται πρότερα καὶ ὕστερα, τὰ δὲ κατὰ φύσιν καὶ οὐσίαν, ὅσα ἐνδέχεται εἶναι ἄνευ ἄλλων, ἐκεῖνα δὲ ἄνευ ἐκείνων μή· ᾗ διαιρέσει ἐχρήσατο Πλάτων. (1019a1-4)

while there are no entities corresponding to these general types.[29] Priority in implication as defined above, however, only allows pair-wise comparisons between entities.

(PI) is not formulated in a way to handle comparisons of primary substance with the other general types of entities taken as general types. However, I think that we can define a notion of priority in implication, which allows us to make the sorts of comparisons that Aristotle makes in *Categories* 5. Aristotle can say that the existence of at least one primary substance follows from the existence of any entity of one of the other three types. Let's call this sort of implication of existence, type-implication of existence. One type of entity type-implies another if and only if it is impossible for there to be any token of the first type unless there is at least one token of the second type.

> **(TI)** For all types of entity, X and Y, X type-implies Y if and only if it is impossible for any token of X to exist unless at least one token of Y exists.

We can now define type-priority in implication in the following way:

> **(TPI)** For all types of entity, X and Y, X, is type-prior to Y, if and only if Y type-implies X, and X does not type-imply Y.

Each of the other types of entity type-implies the existence of primary substance. As we saw above, however, it is equally true that primary substance type-implies the existence of each of the other general types of entity. Primary substance fails to be type-prior in implication of existence to any of the other types of entity. Rather, each of the four kinds seems to be on a par with each of the others with respect to type-implication of existence.

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[29]   We can compare 'primary substance' with 'human' in this regard. We might take 'human' as picking out a type of entity, but 'human' also refers to an entity, the universal *human*. 'Primary substance' does not refer to any universal. In this regard, 'primary substance' doesn't name any entity.

If we look at the situation in terms of individual entities, priority in implication is diametrically opposed to priority in substance. Aristotle takes species to be prior in substance to their genera, but genera will be prior in implication of existence to their species. In any possible world where *human* exists, *animal* will also exist. However, it is possible for there to be a world in which *animal* exists, but *human* does not; imagine a world in which only reptiles exist. *Human* is prior in substance to *animal*, but *animal* is prior in implication of existence to *human*.

The comparison between a primary substance and its species reveals the same problem. There is no possible world in which Socrates exists but *human* fails to exist. However, there are possible worlds in which *human* exists but Socrates does not. *Human* is, therefore, prior in implication of existence to Socrates. However, Aristotle seems to think that us that Socrates is somehow prior is substance or being to *human*, by being a *primary* substance or being while *human* is only a secondary substance or being. In taking Socrates to be prior in substance to *human*, I take Aristotle to hold that Socrates is somehow ontologically prior to *human*.[30] Furthermore in holding that Socrates is a primary substance or a primary being, Aristotle seems to hold that Socrates is ontologically fundamental. However, if priority in implication of existence is taken as a measure of ontological priority, it is difficult to see how Aristotle can be justified in taking Socrates to be ontologically prior to *human*, let alone in taking Socrates to be ontologically fundamental.

I turn next to Aristotle's definition of priority in nature as developed in *Categories* 12-13. When we compare primary substance as a type with the other types of entity, we will see that primary substance turns out to be prior in nature to the other

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[30]   We still have to figure out what ontological priority amounts to on this view. So far, all we have seen is that it cannot simply be priority in implication of existence. I will suggest later in the chapter that one thing is ontologically prior to another by being a cause of being for it.

types of entity. However, individual primary substances turn out to be posterior in nature to their species, and species posterior to their genera.

At 14b9, Aristotle recognizes a variety of priority other than the four listed above:

> So, there are this many ways of speaking of priority. However, there would seem to be another type of priority beyond those mentioned. For among the things that reciprocate concerning the implication of existence, the one which is somehow a cause of being for the other would be reasonably called prior by nature. And it is clear that there are some cases like this. For there being (a) man reciprocates concerning the implication of existence with the true statement concerning it. For if (a) man exists, the statement by which we say that (a) man exists is true. And indeed it reciprocates, since if the statement by which we say a man exists is true, then (a) man exists. But the true statement is in no way a cause of the existence of the thing (*pragma)*, while it is clear that the thing (*pragma*) is somehow the cause of the existence of the true statement. For a statement is true or false by the thing's (*pragma*) existing or not. So that one thing might be said to be prior to another in five ways (14b9-23).[31]

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[31]   Οἱ μὲν οὖν λεγόμενοι τοῦ προτέρου τρόποι τοσοῦτοί εἰσιν. δόξειε δ' ἂν καὶ παρὰ τοὺς εἰρημένους ἕτερος εἶναι προτέρου τρόπος· τῶν γὰρ ἀντιστρεφόντων κατὰ τὴν τοῦ εἶναι ἀκολούθησιν τὸ αἴτιον ὁπωσοῦν θατέρῳ τοῦ εἶναι πρότερον εἰκότως φύσει λέγοιτ' ἄν. ὅτι δ' ἔστι τινὰ τοιαῦτα, δῆλον· τὸ γὰρ εἶναι ἄνθρωπον ἀντιστρέφει κατὰ τὴν τοῦ εἶναι ἀκολούθησιν πρὸς τὸν ἀληθῆ περὶ αὐτοῦ λόγον· εἰ γὰρ ἔστιν ἄνθρωπος, ἀληθὴς ὁ λόγος ᾧ λέγομεν ὅτι ἔστιν ἄνθρωπος· καὶ ἀντιστρέφει γε, – εἰ γὰρ ἀληθὴς ὁ λόγος ᾧ λέγομεν ὅτι ἔστιν ἄνθρωπος, ἔστιν ἄνθρωπος· – ἔστι δὲ ὁ μὲν ἀληθὴς λόγος οὐδαμῶς αἴτιος τοῦ εἶναι τὸ πρᾶγμα, τὸ μέντοι πρᾶγμα φαίνεταί πως αἴτιον τοῦ εἶναι ἀληθῆ τὸν λόγον· τῷ γὰρ εἶναι τὸ πρᾶγμα ἢ μὴ ἀληθὴς ὁ λόγος ἢ ψευδὴς λέγεται. ὥστε κατὰ πέντε τρόπους πρότερον ἕτερον ἑτέρου λέγοιτ' ἄν. (14b9-23)

     This passage has the appearance of having been tacked on to 14a26-b8 sometime after the first passage was written. 14a26-b8 (perhaps including b9-10) looks like a completed discussion of four types of priority. Aristotle then adds in a fifth type of priority, which really amounts to a modification of the second type of priority that he mentions in 14a26-b8. It is interesting to note that Aristotle attributes the unmodified version of priority in implication to Plato in *Metaphysics* Δ.11 and calls it "priority in nature and substance." The end of *Categories* 12 and the whole of *Categories* 13 seem to involve rethinking priority in nature to take causal considerations into account. I tentatively suggest that the end of *Categories* 12 and the whole of 13 reflect a more nuanced view than the beginning of 12 and *Metaphysics* Δ.11, and that these passages might represent a later stage in Aristotle's thought. Nevertheless, Aristotle claims in Δ.11 that the subject and the substance are prior in nature and being, while in *Categories* 13 he claims that genera are prior in nature to species even though species are subjects for genera. In this way, the view in Δ seems closer to the view in *Categories* 5 than does the view in *Categories* 12-13. For a more detailed discussion of the relation of Aristotle's claims about priority in his various works, see Cleary (1988).

Aristotle points out that there are some cases where things reciprocally imply each other's existence, but in which we think that one of the pair is prior to the other. However, priority in implication of existence does not distinguish either of the two entities as prior to the other. Aristotle observes that even in cases where there is reciprocal implication of existence, there can be an asymmetry in the causal relationship between the entities. The existence of one might be a cause of the existence of the other, while the converse fails to be the case.[32]

Aristotle tells us that we have a fifth type of priority here, and defines this type of priority as follows:

> **(P5)** For all entities, *x* and *y*, *x* is type-5 prior to *y* if and only if it is impossible for *x* to exist unless *y* exists, and it is impossible for *y* to exist unless *x* exists, and *x* causes *y* to exist, and *y* does not cause *x* to exist.

Aristotle illustrates this type of priority using the example of the relationship between facts and true sentences. In his commentary on *Categories* 12, Ackrill claims, "It is odd to call [the relation between facts and truths] reciprocal implication of existence."[33] However, I think there is a way of reading Aristotle's example on which it is a case of two entities' reciprocally implying the existence of each other. I take Aristotle to be comparing one entity, the universal *human*, with another, the true sentence claiming that *human* exists. For purposes of the example, I think that we should take sentences as subjects for truth and falsity, and should hold that they exist

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[32]   Notice that Aristotle's distinction also lets us distinguish as prior and posterior two necessary existents. It is interesting to look at an example of this sort of reasoning in St. Thomas Aquinas. In his third way (*Summa Theologica Pars I, a Q2 A3*), Aquinas first argues for the existence of at least one necessary being. He then argues that every necessary being is either a cause of its own necessity, or has its necessity caused by another. On pain of regress, he concludes that there must be a necessary being which is the cause of its own necessity. It might follow from God's nature, that he creates certain entities, in which case these entities will be necessary existents. Nevertheless, despite their being necessary existents, these things will be posterior to God, because they are caused to exist by God while the converse is not the case. In the second part of this chapter, I discuss other cases in which entities exist in all the same possible worlds but in which one is ontologically prior to the other.

[33]   Ackrill (1963) pg111-112.

even when they are not uttered.[34] We should take truth to be an accident of sentences. True sentences are, therefore, compounds of an accident and a subject, and a true sentence exists in all and only those possible situations where the sentence in question is true. The sentence claiming that *human* exists is true in all and only those possible situations in which *human* exists. So, the true sentence exists in all and only those possible situations in which *human* exists. *Human* and the true sentence claiming that *human* exists, therefore, reciprocate with respect to the implication of existence. However, the sentence is true in any possible situation in which it is true because *human* exists in that situation. The converse is not the case, however. So *human* is type-5 prior to the true sentence.[35]

In his discussion of simultaneity in *Categories* 13, Aristotle defines a notion of priority in nature, in terms of implication of existence and being a cause of something's existence. He defines simultaneity by nature (*hama phusei*) at 14b27.

> **(SN)** For all entities, *x* and *y*, *x* and *y* are simultaneous in nature if and only if it is impossible for *x* to exist unless *y* exists, and it is impossible for *y* to exist unless *x* exists, and *x* is not a cause of the existence of *y*, and *y* is not a cause of the existence of *x*.[36]

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[34]   Aristotle sometimes seems to think of sentences as things which persist through time, and which change in truth-value. See *Categories* 5, *Metaphysics* ϑ.10. Also see the commentary on ϑ.10 in Makin (2006). However, as we will see later, it is somewhat problematic to hold that sentences are subjects which have truth and falsity as attributes. As Aristotle points out in *Categories* 5 (4a22ff), sentences and beliefs are subjects only in an attenuated sense.

[35]   I think that we could just as easily run this argument in terms of the states of affairs, *human's* existing and the sentence's being true. I think that Aristotle would take the two arguments as identical in meaning. I choose to explain things in the body of the text in the way that I do, so that we will be talking explicitly about the existence of entities.

[36]   See 14b27ff. I am ignoring Aristotle's use of 'simultaneous by nature' to describe the relation between coordinate species of the same genus. We could treat this case by extending priority in nature in the way that we extended priority in substance in section 9.2. However, this would significantly complicate the exposition, and is not of central importance to my project.

In illustrating simultaneity by nature, Aristotle talks about pairs of correlative entities, like double and half. Each of these implies the existence of the other, but Aristotle tells us that neither is a cause of being for the other.[37]

Aristotle does not use the phrase 'prior by nature' (*proteros phusei*) in *Categories* 13, but we can define a notion of priority by nature that naturally goes with simultaneity in nature as defined by (SN).

> **(PN)** For all entities, *x* and *y*, *x* is prior by nature to *y*, if and only if either *x* is prior in implication of existence to *y* or *x* is type-5 prior to *y*.

Like priority in implication, and type-5 priority, priority by nature is defined as a relation that holds between one entity and another. However, as we did with priority in implication, we can extend the definition of priority in nature in a way that allows us to make type-type comparisons between primary substance and other most general types of entity. We will use the notion of type-implication defined above, and a notion of one type of entity's being a cause of being for another type of entity.

> **(TC)** One type of entity, X, is a type-cause of being for another type of entity, Y, if and only if it is not possible for a token of Y to exist unless it has a token of X as a cause of its existence.

We can now define type-priority in nature as follows:

> **(PNT)** For all types of entity, X and Y, X is type-prior by nature to Y
> if and only if
> > Either X is type-prior in implication to Y,
> > Or   X type-implies Y, and
> >   Y type-implies X, and
> >   X is a type-cause of being for Y, and
> >   Y is not a type-cause of being for X.

According to (PNT), primary substance will be type-prior by nature to the other general types of entity if primary substances are causes of being for other things

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[37] A couple of points are in order here. First, as Cleary (1988) points out, p. 105 n. 28, Aristotle takes some correlative pairs of entities to involve one prior and one posterior entity—for example the thing known is prior to knowledge, and the thing perceived is prior to perception (see *Cat* 8a9ff). Cleary points out that in such examples, one correlative seems both causally and temporally prior to the other. In these cases, Cleary claims that one correlative is taken by Aristotle to be prior in nature to the other.

while other things are not causes of being for primary substances. It is reasonable to hold that Aristotle takes primary substances to count as causes of being for other things by being subjects for other things. The existence of each entity that is not a primary substance is grounded in the existence of one or more primary substances.[38] Entities of the other general types will not count as causes or grounds of being for primary substances. Therefore, Aristotle is justified in taking primary substance to be type-prior in nature to the other general types of entity.

However, according to (PN) genera are still prior in nature to their species, and species to their instances.[39] The fact that genera are prior in implication to their species is enough for them to count as prior by nature. Despite Aristotle's claims that primary substances are the most fundamental beings in *Categories* 5, individual primary substances do not turn out to be primary on any of the definitions of priority found in *Categories* 12-13. Nevertheless, in these passages, Aristotle comes very close to recognizing a sort of priority on which primary substances are prior to other entities including their species and genera. I discuss this sort of priority in the next section.

Section 9.4: Ontocausal Priority

In his definition of type-5 priority in *Categories* 12, Aristotle holds that one entity can be type-5 prior to another only if the existence of each entity entails the existence of the other. It is only when entities are simultaneous with respect to implication of existence that causal considerations are brought to bear in order to determine which is prior in nature. However, there seem to be instances in which one entity is a cause of being for another, but in which the two do not reciprocate concerning the implication of existence. While he does not define such a notion of

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[38]   I discuss the nature of this grounding relation in the second part of this chapter, and try to make more precise the claim that primary substances are causes of being for other entities.

[39]   I take Aristotle's claim about the priority of *animal* to *fish*, and about genera to species at 15a4-7 to be a claim about priority by nature.

priority, I find it hard to read *Categories* 12-13 without thinking of priority with

respect to causation of existence as a type of priority orthogonal to priority in

implication. I will call this type of priority 'ontocausal priority', and we can define it

as follows:

> **(OCP)** For all entities, *x* and *y*, *x* is ontocausally prior to *y*, if and only
> if *x* is a cause of existence for *y* and *y* is not a cause of existence for *x*.

It will be helpful to begin thinking about the relation between priority in

implication and ontocausal priority by thinking about some of Aristotle's examples. In

Aristotle's example of the existence of *human* and the existence of the true statement

that *human* exists, the existence of *human* is a truth-maker for the statement. Aristotle

thinks of this as a *causal* relationship. It will be useful to ask what sort of 'causation'

Aristotle takes to be at issue in this case.

The term 'cause' translates Aristotle's use of '*aitia*'. As has been observed by

many commentators, Aristotle uses '*aitia*' more broadly than contemporary

metaphysicians typically use the term 'cause'. Any detailed discussion of the nature of

Aristotelian *aitiai* is beyond the scope of this project, but I will say a couple of things

about how I understand *aitiai*.[40] Let's use the term *aitiation* to name the relation or

family of relations that Aristotle takes to hold between *aitiai* and the things of which

they are *aitiai*. Aristotle takes the relata of *aitiation* to be entities or states of affairs in

the world, rather than propositional or linguistic items.[41] He also takes claims about

aitiation to be referentially transparent rather than referentially opaque.[42] In these

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[40]   For more complete discussion of the nature of *aitiai* see Annas (1982), Fine (1987), and Freeland (1991).

[41]   Sometimes, see *Physics II.3*, Aristotle holds that sentences can be *aitiai* of other sentences. For example, the premises of an argument are said to be an *aitia* of the conclusion. I do not think that this fact affects my main point here.

[42]   For a challenge to this claim, see Julius Moravcsik "Aristotle on Adequate Explanations" (1974) Julia Annas (1982) claims that Aristotle thinks of *aitiai* in an explanatory way, but that he fails to notice that such contexts are opaque. Charles (1984) and Fine (1987) defend the claim that Aristotle's claims about *aitiai* are referentially transparent. For a good overview of the above-mentioned views, and some doubts that the question of opacity can be sensibly raised for Aristotle, see Freeland (1991). On the other hand Freeland "Aristotelian Actions" (1985) seems to combine an extensional

ways, *aitiation* is closer to causation than it is to explanation, as causation and explanation are generally understood in contemporary philosophy.[43]

Aristotle, however, claims that one thing is an *aitia* of another in cases where, while we do think that it is fitting to talk about the first thing in explaining various things about the second, we do not think that the first thing is a *cause* of the second. We might, therefore, think about *aitiation* as the relation in the world that underlies good explanations.[44] I take the relation between an Aristotelian *aitia* and that of which it is an *aitia* to be an objective and interest-independent relation between entities in the world.[45]

In many cases, these explanation-grounding relations can be understood in terms of causal relevance, where causal relevance can be understood in terms of the relation of event causation familiar in contemporary philosophy.[46] In the case of the sentence and the entity, however, I am not sure that the causal relevance account will work. For example, Aristotle takes the existence of a thing counts as an *aitia* of the truth of a claim, but I somewhat wary of thinking that there is any causation in the contemporary sense at play here. Nevertheless, we often use causal language in

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understanding of *aitiai* with a theory on which events and entities are extremely fine-grained. The result is a view on which many cases of substitution, which might appear to render *aitiaition* causally opaque, turn out to involve the substitution of expressions that do not corefer. I am sympathetic to this interpretation of *aitia* and to the underlying interpretation of Aristotle's ontology that it implies.

[43] There is a good bit of overgeneralization involved in claiming that there is a general view about causation or explanation in contemporary metaphysics. Nevertheless, here are some features of causation which I am inclined to accept. Causation is a relation between concrete events (or perhaps facts). Causal contexts are referentially transparent, in that substitution of coreferring expressions in true causal claims always yield true causal claims. Causes are ontologically distinct from their effects. On the other hand, theories seem to serve as relata for explanation. Explanatory contexts often seem to be opaque in that substitution of coreferring terms in true explanatory claims do not always yield true explanatory claims.

[44] Sorabji (1980) has such a view. For a detailed exposition and defense, see Fine (1987).

[45] For the claim that *aitiation* is context and interest-dependent, see vanFrassen (1980), and Putnam and Nussbaum (1992). The conflict between such a "pragmatic" view and an "explanatory realist" view is treated in Freeland (1991). I agree with Freeland that Aristotle is in the realist camp.

[46] Fine (1987) expresses this view.

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describing the relationship between states-of-affairs and sentences. We claim that

states of affairs *make* sentences true, and in this regard we follow Aristotle.

In *Metaphysics* ϑ.10, Aristotle expresses a view about statements and facts

similar to one expressed in *Categories* 12:

> [Being and not being are spoken of] also [most strictly] in the case of
> the true and the false, since in the case of things this is by their being
> combined and divided, so that he speaks the truth who thinks that what
> is divided is divided and that what is combined is combined, and he
> speaks falsely [who believes] what holds opposite to the things…For it
> is not due to our thinking truly that you are pale that you are pale, but it
> is due to your being pale that we who say this speak truly (1051b1-5,
> b6-9).[47]

Sentences and beliefs are true and false *because* of the way the world is, while the

converse is not the case. Aristotle is making the same point in *Categories* 12 in

claiming that things are *aitiai* of true statements. But in what way are things or facts

aitiai of truths?

Aristotle's discussion of statements and beliefs in *Categories* 5 points us

toward an answer to this question. Aristotle has claimed that it is proper to substances

to be the only sorts of things that can receive contraries while remaining one and the

same. He considers statements and beliefs to be possible counterexamples to this

claim. One and the same statement can be true at one time, but false at another.

Aristotle responds that statements and beliefs do not provide a counterexample to his

claim about substance. At the very least, Aristotle claims that there is a difference in

the manner in which statements and beliefs receive contraries:

> For in the case of substances, it is by themselves changing that they are
> capable of receiving contraries—for what has come to be cold from

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47   τὸ δὲ [κυριώτατα ὂν] ἀληθὲς ἢ ψεῦδος, τοῦτο δ' ἐπὶ τῶν πραγμάτων ἐστὶ τῷ συγκεῖσθαι ἢ διῃρῆσθαι, ὥστε ἀληθεύει μὲν ὁ τὸ διῃρημένον οἰόμενος διῃρῆσθαι καὶ τὸ συγκείμενον συγκεῖσθαι, ἔψευσται δὲ ὁ ἐναντίως ἔχων ἢ τὰ πράγματα… οὐ γὰρ διὰ τὸ ἡμᾶς οἴεσθαι ἀληθῶς σε λευκὸν εἶναι εἰ σὺ λευκός, ἀλλὰ διὰ τὸ σὲ εἶναι λευκὸν ἡμεῖς οἱ φάντες τοῦτο ἀληθεύομεν.

hot, or dark from pale, or good from bad, has changed (for it has altered). Similarly, in the other cases, each thing, itself admitting change, is able to receive the contraries. Statements and beliefs, on the other hand, remain themselves completely unchanged in every way, but it is because the thing is moved that the opposite comes to be in the case of these things. For the statement that someone is sitting remains itself the same, but when it comes to be true and it comes to be false, it does so because the thing has changed. And similarly in the case of beliefs. So that, at the very least, it would be proper in kind to substance to be able to receive contraries according to a change in itself, even if someone were to grant these things, that a belief or statement is able to receive contraries (4a29-b5).[48]

According to the view expressed by Aristotle in this passage, sentences and beliefs remain completely unchanged when they go from being true to being false. What some people want to count as a change in the sentence does not involve any intrinsic alteration of the sentence, but seems to be a mere Cambridge change. A sentence comes to have a different truth-value *by and only by* there being a change in the things that the sentence is about. So, even if we do want to hold that sentences receive contraries, changes in sentences are wholly constituted by changes in the world.

However, Aristotle even doubts that, properly speaking, sentences and beliefs receive contraries at all. He continues the passage quoted above:

But this is not true. For the statement and the belief are not said to be capable of receiving contraries by themselves receiving something, but by some affection having come to be for something else. For it is by this, by the thing's being or not being, that the sentence is said to be true or false, and not by its being able itself to receive contraries. For strictly speaking neither statement nor belief is ever changed by anything. Therefore, they will not be able to receive contraries, because nothing comes to in them. But indeed the substance, by itself receiving the contraries, is said to be able to receive contraries. For it receives

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[48] τὰ μὲν γὰρ ἐπὶ τῶν οὐσιῶν αὐτὰ μεταβάλλοντα δεκτικὰ τῶν ἐναντίων ἐστίν, – ψυχρὸν γὰρ ἐκ θερμοῦ γενόμενον μετέβαλεν (ἠλλοίωται γάρ), καὶ μέλαν ἐκ λευκοῦ καὶ σπουδαῖον ἐκ φαύλου, ὡςαύτως δὲ καὶ ἐπὶ τῶν ἄλλων ἕκαστον αὐτὸ μεταβολὴν δεχόμενον τῶν ἐναντίων δεκτικόν ἐστιν· – ὁ δὲ λόγος καὶ ἡ δόξα αὐτὰ μὲν ἀκίνητα πάντῃ πάντως διαμένει, τοῦ δὲ πράγματος κινουμένου τὸ ἐναντίον περὶ αὐτὰ γίγνεται· ὁ μὲν γὰρ λόγος διαμένει ὁ αὐτὸς τὸ καθῆσθαί τινα, τοῦ δὲ πράγματος κινηθέντος ὁτὲ μὲν ἀληθὴς ὁτὲ δὲ ψευδὴς γίγνεται· ὡςαύτως δὲ καὶ ἐπὶ τῆς δόξης. ὥστε τῷ τρόπῳ γε ἴδιον ἂν εἴη τῆς οὐσίας τὸ κατὰ τὴν αὑτῆς μεταβολὴν δεκτικὴν τῶν ἐναντίων εἶναι, – εἰ δή τις καὶ ταῦτα παραδέχοιτο, τὴν δόξαν καὶ τὸν λόγον δεκτικὰ τῶν ἐναντίων εἶναι. (4a29-b5)

sickness and health, and paleness and darkness, and receiving itself
each of the things of this sort it is said to be bale to receive contraries
(4b5-16).[49]

In this passage, Aristotle denies not only that sentences and beliefs undergo real

change with respect to truth and falsity, but he also denies that sentences and beliefs

even really have truth and falsity as properties. It is not merely the case that changes in

truth-value are mere Cambridge changes, but a sentence's possessing truth is mere

Cambridge possession of a property to begin with. For sentences are true and false *by*

and only by things in the world being arranged the way that they are. On the other

hand, the things in the world are the way that they are by themselves possessing

properties.

We are now in a position to state the way in which a thing or fact is a cause of

being for a true sentence. Things or facts are causes of being for a true sentence,

because a sentence's being true is wholly constituted by a thing's existence or a fact's

obtaining.[50] We do not have a causal relation (as causation is typically understood in

contemporary metaphysics) between two distinct events or facts, but rather a case

where one fact is constituted by another. We seem to be able to give the following

sufficient condition for one thing's being a cause for being for another:

> **(CB)** For all entities, *x* and *y*, if the existence of *x* is constituted by the
> existence of *y*, then *x* is a cause of being for *y*.

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[49]   οὐκ ἔστι δὲ ἀληθὲς τοῦτο· ὁ γὰρ λόγος καὶ ἡ δόξα οὐ τῷ αὐτὰ δέχεσθαί τι τῶν
ἐναντίων εἶναι δεκτικὰ λέγεται, ἀλλὰ τῷ περὶ ἕτερόν τι τὸ πάθος γεγενῆσθαι· – τῷ γὰρ τὸ
πρᾶγμα εἶναι ἢ μὴ εἶναι, τούτῳ καὶ ὁ λόγος ἀληθὴς ἢ ψευδὴς εἶναι λέγεται, οὐ τῷ αὐτὸν
δεκτικὸν εἶναι τῶν ἐναντίων· ἁπλῶς γὰρ οὐδὲν ὑπ' οὐδενὸς οὔτε ὁ λόγος κινεῖται οὔτε ἡ δόξα,
ὥστε οὐκ ἂν εἴη δεκτικὰ τῶν ἐναντίων μηδενὸς ἐν αὐτοῖς γιγνομένου· – ἡ δέ γε οὐσία τῷ
αὐτὴν τὰ ἐναντία δέχεσθαι, τούτῳ δεκτικὴ τῶν ἐναντίων λέγεται· νόσον γὰρ καὶ ὑγίειαν
δέχεται, καὶ λευκότητα καὶ μελανίαν, καὶ ἕκαστον τῶν τοιούτων αὐτὴ δεχομένη τῶν ἐναντίων
εἶναι δεκτικὴ λέγεται.

[50]   As I mention above, I think that fact talk and thing talk are interchangeable for Aristotle. For a
fact to obtain is for a certain composite object to exist. For example, for the fact that Socrates is pale to
obtain is for a composite of *pallor* and Socrates to exist. See *Metaphysics* ϑ.10 and Makin's
commentary, and my discussion of change in chapter 5.

Whether we can extend **(CB)** to give us necessary and sufficient conditions is a tricky question. Aristotle certainly recognizes cases where one thing causes another to exist. For example, the father is a cause of the existence of the child, and the builder is a cause of the existence of the building.[51] We might be perfectly happy to say that the father and the builder count as causes of being, and that they are causally prior to the child and building respectively. The type of causation at issue in these cases, however, seems to differ from the type of causation involved in the case of the fact and the true statement. A child does not exist *by* the father's existing. Rather the existence of the child and that of the father are distinct states-of-affairs related as cause to effect, in something like the contemporary sense of 'cause'. I want to restrict our discussion of causation of being to cases of the former sort. We will call one thing or fact an *ontocause* of another when the existence of the second is at least partially constituted by the existence of the first.

> **(OC)** For all entities, *x* and *y*, *x* is an ontocause for *y* if and only if the existence of *x* is (at least partially) constituted by the existence of *y*.

We can amend the definition of ontocausal priority to take into account our restriction of causation to ontocausation:

> **(OCP*)** For all entities, *x* and *y*, *x* is ontocausally prior to *y*, if and only if *x* is an ontocause of *y*, and *y* is not an ontocause of *x*.

Ontocausal priority also seems to be present when we consider the existence of one and two. Any instance of the existence of a pair of things will be partially constituted by the existence of each single entity in that pair. In this way, each single entity (partially) constitutes the pair. Each single entity is, therefore, a (partial) ontocause of being for the pair. However, while the existence of the pair is sufficient for the existence of each thing, it is not the case that the pair *constitutes* each single

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[51]   See, for example, *Physics* II.3, and *Metaphysics* A.3ff.

thing. Therefore, each single thing is ontocausally prior to the pair, or to state things more generally that one is ontocausally prior to two.[52]

As we have seen in the examples above, one entity can be ontocausally prior to another in cases where the two entities are simultaneous with respect to implication of existence, or in cases where the first is prior in implication to the second. In the case of the thing and the true statement, the existence of the thing ontocauses the existence of the true statement in any possible situation. Therefore, the existence of the thing implies the existence of the true statement. Additionally, the true statement has no other possible ontocause, since a true statement can only be ontocaused by the existence of the relevant thing. However, true statements cannot exist in the absence of an ontocause. Therefore, the existence of the true statement in any possible situation implies the existence of the relevant thing. The statement and the thing therefore reciprocate concerning the implication of existence.

In the case of one and two, it is impossible for two to exist without having one as an ontocause. In any possible situation where an instance of two exists, it must have two partial ontocauses, each of which is an instance of one. Therefore, it is impossible for two to exist unless one also exists, and the existence of two implies the existence of one. However, it is possible for one to exist without ontocausing two. This possibility would be realized if exactly one thing existed.[53] The existence of one, therefore, does not imply the existence of two.

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[52]   I think that the story might be fleshed out a bit as follows. For this instance of two, taken as a nonsubstantial particular, to exist it must inhere in some subject. This subject will be constituted by two things each of which is a subject for the nonsubstance quantity one. Each singular thing, where this is thought of as a composite of the particular subject and the instance of unity, is a partial ontocause of the pair, where this is thought of as a composite of the two concrete subjects and the instance of duality. Unity, taken universally, will count as an ontocause of duality, taken universally, because no instance of duality can exist without having instances of unity as partial ontocauses.

[53]   Aristotle probably would not take this to be a real possibility, since whenever a substance exists it will have attributes and belong to kinds. And these attributes and kinds will be entities.

If we consider the examples above, we can see that there are two very different sorts of case in which the existence of one thing implies the existence of another. It might be helpful to think about the way in which we normally talk about necessary and sufficient conditions. We sometimes think about necessity and sufficiency causally. A necessary condition for an event is something that needs to be present if the event is to occur. A sufficient condition for an event is a condition, the obtaining of which guarantees the occurrence of the event. On this way of thinking, while it seems normal to claim that the presence of oxygen is a necessary condition for the lighting of a match, it seems odd to claim that the lighting of a match is sufficient for the presence of oxygen.

On the other hand, we sometimes think about necessary and sufficient conditions in purely logical terms, as consisting solely in the truth of a certain conditional claim. In the latter case, the claim that x is a necessary condition for y is logically equivalent to the claim that y is sufficient for x. Nevertheless we can distinguish x's being sufficient for y because x causes y, from x's being sufficient for y because y is a necessary precondition for the existence of x. A similar observation applies to the relation between one thing's implying the existence of another and one thing's being an ontocause of another.[54]

If one thing ontocauses another in all possible situations where the first exists, then the existence of the cause implies the existence of the effect. These will be cases in which the existence of the ontocause is wholly sufficient for the existence of the effect.[55] However, there are also cases in which the existence of an effect implies the

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[54] Implication of existence is here thought of purely logically, as consisting wholly in the truth of a necessitated conditional.

[55] In cases where the cause is completely sufficient for the effect, the cause will generally be a total cause. In cases where the cause can exist without the effect, it will generally be a partial cause or one of many overdetermining causes, e.g. consider the failure of the existence of one to imply the existence of two.

existence of a cause. These will be cases in which there is only one possible cause of a given effect. In cases where there is only one possible cause for an effect, and that cause is wholly sufficient for that effect, the cause will be simultaneous in implication with, but ontocausally prior to, the effect.

We can also have a case in which one thing is a completely sufficient ontocause of another, but in which it is possible for the second thing to be ontocaused by something else. In such a case, the effect will be prior in implication to the effect. This seems to be exactly the sort of case that is at issue when we consider a species and its superordinate genus. Genera exist *by* the existence of their species. Consider any individual animal, say Sylvester the cat. Sylvester is an animal *by* being a cat. On the other hand, it seems incorrect to say that Sylvester is a cat *by* being an animal. Sylvester's felinity is an ontocause of his animality, since his animality seems to be constituted by his felinity. Furthermore, the species *cat* is a wholly sufficient ontocause of *animal*, in that *animal* will be caused to exist in any situation in which *cat* exists. Nevertheless, *animal* can exist in situations in which *cat* does not exist, since there are other possible entities that could serve as ontocauses of *animal*. In the actual world, *animal* seems to be ontocausally overdetermined by a wide range of species.[56] Nevertheless, each of the existing species of animal, including *cat*, does

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[56] Each existing species of animal seems to be a wholly sufficient cause for the existence of *animal*. While in some cases we might worry that the existence of overdetermination undermines a putative cause's claim to being a cause, the worry seems misplaced in this case. My intuitions about the following case are somewhat controversial, and I cannot mount any kind of defense of my view here, but I will lay out a case that strikes me as similar to the genus-species case.

Imagine that there are four one-ton boulders sitting on a scale, and that the scale's registering any weight equal to or greater than one ton causes an alarm to sound. In this world, it seems that the actual cause of the alarm's sounding is the presence of the four boulders on the scale. The four boulders' being on the scale seems to be partially constituted by each individual boulder's being on the scale. The presence of each boulder, therefore, seems (to me anyway) to count as a partial cause of the alarm's sounding, despite the fact that the presence of each boulder is causally sufficient for the sounding of the alarm.

This might be a better example. Imagine a cat that is composed out of number of atoms. It seems that any very large and continuous subset of the actual atoms in the same configuration that they are in right now could constitute the very same cat. There will be many overlapping, but non-identical arrangements of atoms each of which seems to be sufficient for the existence of the very same cat. This

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seem to be an actual ontocause of the existence of *animal*, since *animal* seems to be constituted by each of the species.[57] While the presence of any one of these species is counterfactually sufficient for the existence of *animal*, in the actual world *animal* is constituted by a number of distinct species. *Animal*, however, does not seem to be an ontocause of *cat* or any other species. *Cat* is, therefore, ontocausally prior to *animal.*

On Aristotle's view, *animal* is prior in implication (and, therefore, in nature) to *cat*, while *cat* is ontocausally prior to *animal.* Which of these sorts of priority should we count as *ontological* priority? In other words, in virtue of which sort of priority does it seem more fitting to hold that one thing is a more fundamental being than another? Once we understand that *animal* is prior in implication to *cat* only because *cat* can't exist without thereby making it the case that *animal* exists, it seems strange to hold that *animal* is ontologically prior to *cat* or that *animal* is a more fundamental being than *cat*. Rather, it seems that because the being of *cat* is a cause for the being of *animal*, *cat* should be taken to be a more fundamental being than *animal*.[58] And, if I am right to see Aristotle's claims in *Categories* 5 that the species is more a substance than the genus as a claim that the species is prior in substance or prior in being to the

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leads to a problem if we say that each of them does compose the cat, since one cat can't both have and lack an atom. My intuition in this case is that the cat is somehow maximal. Let X be a collection of atoms arranged in a certain way, and let y and z be individual atoms. Say that atoms X+y in their actual arrangement would have sufficed for the cat and they would all have been parts of the cat. And atoms X+z in their actual arrangement would have sufficed for the cat and all have been parts of the cat. I have the intuition (but it's only an intuition) in this case that the actual constituents of the cat include X, y and z. Similarly even though any single species would suffice for the existence of the genus, I have an intuition that the actual cause of the genus at any time includes all the subordinate species at that time.

[57] As things stand in the actual world, *animal* seems to be partially constituted by each of the species. However, each of these species would be sufficient to constitute *animal* on its own.

[58] In cases where *x* is prior in implication to *y* because *y* cannot be caused by anything other than *x*, and *x* is not a wholly sufficient cause of *y*, I think that ontological priority and priority in implication will match up. Socrates and the NSP pallor in Socrates will meet these conditions. However, even in this sort case, it does not seem to be the asymmetrical implication of existence that makes *x* prior to *y*. Rather, it seems that *x* is prior to *y* because *y's* existence is ontocaused by *x's* existence. Asymmetrical implication of existence seems to allow too many irrelevant cases to count as cases of priority. If the number four is a necessary existence, then it is prior in implication of existence to me. I am not sure that we would want to hold that it is a more fundamental being than I am on this account, however. I am not sure that numbers and material substances stand in an ontological priority relations to each other.

genus, then Aristotle does take the species to be a more ontologically fundamental than the genus.

Similar reasoning holds in the case of primary substances and their species. A species exists *because* the primary substances exist. The species is constituted by the individuals in a way similar to the way in which genera are constituted by their species. Furthermore, the existence of each individual cat is sufficient for the existence of the species. The individual cat, Sylvester, is an ontocause of *cat*, while *cat* is not an ontocause of Sylvester. Sylvester is, therefore, ontocausally prior to *cat*. Nevertheless, *cat* is prior in implication and prior by nature to Sylvester as these types of priority are defined in *Categories* 12. Once again it seems that Aristotle's claims about priority in substance in *Categories* 5 reveal that ontocausal priority is a better measure of priority in substance or priority in being than is priority in implication of existence.

While Aristotle never explicitly defines ontocausal priority in his discussion of priority in *Categories* 12-13, it is a short step from Aristotle's claims about one thing's being a cause of being for another to a definition of ontocausal priority. Furthermore, while priority in implication and priority in nature conflict with Aristotle's claims about what sorts of beings are fundamental, the notion of ontocausal priority gives us an understanding of priority, which validates Aristotle's claim that individual substances are primary beings.

We might wonder, therefore, why Aristotle fails to recognize a form of priority that seems to suit his purposes so well. I am intrigued by an answer to this problem suggested by John Cleary in his book, *Aristotle on the Many Senses of Priority*. Cleary postulates that Aristotle's claims about priority in *Categories* 12 were made relatively early in his career, while he was still largely sympathetic to a Platonic picture of ontology. His claims in *Categories* 5, on the other hand, represent the views of a more

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philosophically mature Aristotle who is beginning to develop ideas about substance that conflict with those of his teacher.[59]

While I am wary about trying to attribute relative dates to various chapters in the *Categories*, I do think that it is interesting to note that priority in implication seems to agree with a Platonic view on which Forms are ontologically prior to individuals.[60] Furthermore, I think that on a Platonic view, priority in implication and ontocausal priority do not conflict in the way that they conflict on Aristotle's view. Forms, for Plato, are more ontologically fundamental than particulars. A Form will be prior in implication to any of the particular that participate in it. It is impossible for a particular to exist in the absence of the Form in which it participates, while the Form could have existed without the particular. Furthermore, on the Platonic view, a Form is also ontocausally prior to each of its participants. At the very least, this is how Aristotle reads Plato's comments in the *Phaedo*. At 991b3-4, Aristotle writes, "It is said in the *Phaedo* the Forms are causes both of being and of coming to be."[61] Furthermore, on a certain way of looking at Plato's talk about particulars as images or reflections in the *Republic*, we can see Forms as causes of particulars in something like the way in

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[59]   See Cleary (1988), for a more detailed defense of these claims.

[60]   I am calling "Platonic" the view that a Form can exist without particular instances, while the instances cannot exist without the Form. For some doubts that Plato consistently held such a view see Fine (1984). For a discussion about what Aristotle means in attributing to Plato the view that Forms are separable or separate (*choristos*) from particulars see Fine (1984), Morrison (1985a), Morrison (1985b), Morrison (1985c), and Fine (1985). In claiming that Plato takes Forms to be ontologically prior to individuals, I mean not only that Plato takes Forms to be prior in implication of existence to individuals, but also that he thinks that Forms are ontocausally prior to individuals. I think that the two sorts of priority come together in Plato in a way that they do not come together for Aristotle.

[61]   See also *Generation and Corruption* 335b10-b16, where Aristotle tells us that things are said to be in accordance with Forms, are said to come to be by participating in Forms, and are said to perish by losing Forms. Forms, therefore, must be said to be causes of the coming to be of their participants. Aristotle criticizes Plato's view that Forms count as causes for particulars in this way. He claims that a Form sometimes exists with a particular, and sometimes exists without that particular. There must be something that differs between these two situations, but the Form is the same in both. So the Form cannot be the total cause of being of a particular. I will consider this argument briefly in the next chapter. For further discussion of these passages, and of Aristotle's criticisms of Plato, see Annas (1982), Fine (1987).

which an object is a cause of its reflection.[62] We can think of an object as a cause of being for a reflection because the existence of a reflection *just is* something's bearing the reflecting relation to the object that is reflected. In a similar way, we might think that a Form is a cause of being for each of its instances, in that the existence of a participant just is there being something that bears the participation relation to a Form.[63] On the other hand, the participant is not a cause of being for the Form. The existence of the participant, therefore, implies the existence of the Form, not because the participant causes the Form to exist, but because nothing other than that Form could have caused the participant to exist. Priority in implication, ontocausal priority, and ontological fundamentality all go together on Plato's view. If Aristotle was an adherent of broadly Platonic ontological views at the time of his writing *Categories* 12-13, it would be unsurprising that he did not distinguish ontocausal priority from priority in implication.

It would also be unsurprising that Aristotle's discussion of priority in *Categories* 12 and 13 does not fit his own views about the ontological priority of primary substances expressed in *Categories* 5. At some point Aristotle reversed the causal and ontological order between universal and particular. On Aristotle's view,

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[62]   For some passages where Plato talks about the relation between particulars and Forms as similar to the relation between reflections , likenesses or images and the things of which they are the reflections, likenesses or images, see *Republic* 509-510, 532b-d, 596a, 596d-e, 597a-b, 598b, 603a-b. *Timaeus* 28-29. *Parmenides* 132-133 (where Plato seems to be criticizing the likeness analogy). *Sophist* 266ff.

[63]   It is important to say something about what counts as a participant in a Form on the view that I have in mind here. In the *Phaedo* (102d-e), Plato distinguishes Tallness itself from the tallness in Simmias. The former is properly thought of as a Form, while the latter is sometimes called an immanent character. Immanent characters are particulars and numerically distinct immanent characters of tallness are present in different individuals. We can distinguish the Form of Tallness, the immanent character of tallness in Simmias, and Simmias. On the view of Plato that I am considering here, the participation relation properly speaking should be taken to hold between Form and the immanent character, rather than between the Form and Simmias. Simmias is a participant in Form only by courtesy, in virtue of having an immanent character that is a proper participant in the Form. Just as Plato accepts the Tall, the tallness in Simmias and Simmias, Aristotle accepts the universal *tallness*, the NSP tallness in Simmias and Simmias. I take Plato and Aristotle to differ mainly in that Plato takes the Tall itself to be an ontocause for the tallness in Simmias, while Aristotle reverses this and holds that the tallness in Simmias is an ontocause of the universal *tallness*.

particulars imply the existence of universals by being causes of those universals. Aristotle's reversal of the causal order thus results in a tension between priority in implication and ontocausal priority, which Aristotle does not seem to recognize in *Categories* 12-13.[64]

In the next chapter, I examine a crucial difference between the ontological views of Aristotle and those of Plato. I turn to a discussion between Gail Fine, and Gareth Matthews and S. Marc Cohen about the sorts of things that Plato and Aristotle take to be "relational entities". I characterize a notion of "relational entity" which can be used to define ontological priority, and which I think can help capture Aristotle's conception of one thing's being a cause of being for another. In any ontology, the entities that are non-relational will be the fundamental entities. Forms are non-relational entities on Plato's view, while particulars are relational—it is of the essence of a particular be an image or reflection of a Form.[65] On the other hand, Aristotle takes particulars to be prior to universals. Particular substances are non-relational entities, while universals are relational—it is of the essence of a universal to be said-of particulars. We will see that a thing's being a relational entity is closely tied to its needing something else to serve as a cause of being for it.

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[64] Aristotle doesn't seem to recognize the conflict in *Metaphysics* Δ.11 either. He defines priority in nature and substance in terms of asymmetrical implication of existence. He then states that, since there are many ways of being, the subject and substance is prior. However, as we have seen the implication of existence is precisely backwards in the case of primary substances and their species and genera.

[65] Once again, I am thinking of the relation between Forms and immanent characters here, not the relations between Forms and things that have a relation to the Form only accidentally. Simmias might become short in relation to Phaedo, and the immanent character of tallness that Simmias had in relation to Phaedo might cease to exist. However, the tallness in Simmias in no way admits of being short. The immanent character of tallness in Simmias is essentially related in some way to the Tall itself. See *Phaedo* 102d ff. Plato does not tell us what the nature of the relation between the Forms and particulars is supposed to be in the *Phaedo*. In the *Republic*, Plato compares the relation to reflection or being an image, see 509-510, 532b-d, 596a, 596d-e, 597a-b, 598b, 603a-b. In other places, Plato uses the language of participation or sharing in ('*metechein*'). For example, see e.g. *Phaedo* 100c5, 101c5, *Parmenides* 129a ff, 131a ff.

CHAPTER 10

RELATIONAL ENTITIES AND PRIMARY SUBSTANCES

Section 10.1: Introduction

In their paper "The One and the Many", Gareth Matthews and S. Marc Cohen offer, on Aristotle's behalf, an argument against some key features of Plato's ontology. In "Relational Entities", Gail Fine raises some objections to the argument offered by Matthews and Cohen. Fine's paper has two main points. First, she argues that Aristotle is as susceptible as Plato to the argument on offer. Second, she does not think that the argument poses a threat to either view. With respect to Fine's first point, I think that we can point to a crucial difference between the views of Aristotle and Plato (or at least between Aristotle's views and those that he attributes to Plato)[1], and that once we understand this difference we will see that Plato but not Aristotle is subject to the dilemma contained in Matthews and Cohen's argument. With respect to Fine's second point, I am not sure that Aristotle's argument need particularly vex Plato. In the course of this discussion, I will also offer a suggestion about the difference between what have been termed "relational" and "nonrelational" versions of realism about universals. As I will draw the distinction, Plato has a relational view and Aristotle has a view on which some properties of particulars are not accounted for relationally.[2] Once again, however, it is unclear that Aristotle has any compelling

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[1]   The view that I attribute to Plato is a fairly common one, and has been attributed to Plato by many commentators going back to Aristotle. On this view, Plato thinks that Forms are separate and eternal entities, which are not ontologically dependent on particulars, and upon which the particulars are ontologically dependent. Furthermore, particulars have the natures that they do by participating in, imitating, or being reflections of Forms. I do not defend this interpretation of Plato in the present work. For criticism of the standard view of Plato, see Gail Fine's *On Ideas*, and *Plato on Knowledge and Forms*, especially Chapters 11-15.

[2]   For use of 'relational realism' and 'nonrelational realism' see Gail Fine's "Armstrong on Relational and Nonrelational Realism" (1981). At issue in this article is David Armstrong's claim in *Universals and Scientific Realism* that particulars do not count as possessing properties by bearing a relation to universals. The position that I attribute to Aristotle is related to, but not identical to, the view that goes by the name 'nonrelational realism' in Fine's (1981) discussion of Armstrong.

arguments that we should accept his theory over Plato's. In any case, I hope to get a bit clearer about what the choice between Aristotle's and Plato's theories of ontology involves.

In section 10.2, I outline and discuss Matthews and Cohen's presentation of Aristotle's argument against Plato, and sketch the way in which they take Aristotle to escape the dilemma with which he confronts Plato. In section 10.3, I discuss Fine's response to this argument. I suggest that, on her understanding of what being a "relational entity" consists in, her response to Matthews and Cohen is completely appropriate. However, I think that an alternative conception of what it is to be a relational entity is available, on which Aristotle has a genuine disagreement with Plato. In section 10.4, I offer this alternative account of relational entities, and argue that Plato is subject to the dilemma offered by Aristotle. In section 10.5, I attempt to explain how Aristotle might avoid the dilemma thus construed. I conclude the chapter with a consideration of the similarities and differences between the ontological theories offered by Plato and Aristotle.

Section 10.2: Matthews and Cohen's Dilemma For Plato

Matthews and Cohen begin by attributing a certain theory of predication to Plato. Take the sentences, 'Socrates is wise,' and 'Pericles is wise.' 'Socrates' and 'Pericles' refer, respectively, to Socrates and Pericles. 'Wise' also refers to something. Furthermore, the referent of 'wise' in each of our sentences has to be some one thing, such that it is in virtue of each man's bearing a relation to it that Socrates and Pericles are each properly said to be wise. According to Plato, the referent of 'wise' in both sentences is the Form of *Wisdom*, and our sentences are true if and only if Socrates or Pericles participates in the Form of *Wisdom*.[3] We thus can give an ontological analysis

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[3]   I think that this story is a bit of an oversimplification. In the *Phaedo*, Plato distinguishes between tallness itself (αὐτὸ τὸ μέγεθος) and the tallness in us (τὸ ἐν ἡμῖν μέγεθος). The former is the Form *Tallness*, and the latter seems to be a particular instance of tallness, an *immanent character*,

of the truthmaker of the sentence 'Socrates is wise,' in terms of the entities Socrates

and *Wisdom*, and the relation of participation. Furthermore, it seems that Plato will tell

the same story about all cases in which something is predicated of an individual.[4] We

can summarize the above in terms of the following principle:

> (P)   Whenever F can be properly predicated of an individual, *x,* it is
> because *x* bears a relation of participation to the Form of F-
> ness.[5]

(P) is a specific version of a more general principle, which seems sufficient to generate

the Aristotelian dilemma that we will examine in a moment.

> (P-)   Whenever F can be properly predicated of an individual, *x,* it is
> because *x* bears a relation to some entity other than *x*.

To put things in a broader context, (P-) is the claim that all predication is

susceptible to relational analysis. Furthermore, if we specify that the 'entity other than

x' on the right-hand side of (P-) must be a universal, we have characterized a view that

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which can come into and go out of existence. See Gail Fine's, "Immanence" (1986) for a discussion of immanent characters, and further references to the immanent character literature. Plato distinguishes Simmias from the tallness that he happens to possess, and claims that Simmias is tall, not because he is Simmias but because of the tallness that he possesses. Insofar as we want to claim that something participates in the Form *Tallness*, we should claim that the immanent character of tallness, rather than Simmias, participates in the Form. When I claim that a person participates in a Form, the claim will often be elliptical for the claim that the person possesses an immanent character which participates in the Form.

      In a similar way, Aristotle will hold that the universal *tallness* is said-of the nonsubstantial particular tallness inherent in Simmias, rather than being said-of Simmias. It is also interesting to note that Plato claims that immanent characters are 'in' things, and I think that Aristotle's inherence talk is nonaccidentally related to the view that Plato expresses here.

[4]   See Matthews and Cohen, "The One and the Many" (1968) p630-631.

[5]   My (P) is different than the principle of the same name in Matthews and Cohen (1968) and Fine (1983). There is a slight danger that (P) will lead to use-mention confusion. 'Predication' in (P) refers to a linguistic relation between a predicate expression and an object, and a predicate can be properly predicated of a thing if and only if the sentence by which we predicate the predicate of the thing is true. (P) is shorthand for the following more clunky principle (P*).

      (P*) Whenever a sentence, $\ulcorner \alpha$ is $\vartheta \urcorner$ is true, it is true because the entity referred to by $\ulcorner \alpha \urcorner$
           participates in the Form referred to by $\ulcorner \vartheta \urcorner$.

$\ulcorner \vartheta \urcorner$ and $\ulcorner \alpha \urcorner$ are schematic letters for which we will substitute the names of a linguistic predicate and an individual respectively. (P*) is still somewhat problematic. First of all, we have to take in to account the reservation expressed in note 3 above—strictly speaking immanent characters, and not the referents of our ordinary proper names, will participate in Forms. Second, (P*) runs the risk of making us attribute a Form to every general expression, while Plato probably does not want to do so. I will ignore these complications for the time being.

has been called "relational realism about universals".[6] Matthews and Cohen's argument against Plato can easily be reformulated as an argument against relational realism about universals. Matthews and Cohen hold that Aristotle is able to avoid the dilemma that he takes to threaten Plato by denying (P-).

We are not yet in a position to construct Aristotle's dilemma. In addition, we require the following principle:

> (R)   For *x* to be able to bear any relation R to something else *y, x* must be something in its own right, independently of its bearing R to *y*.[7]

We can now give the argument that Matthews and Cohen offer on Aristotle's behalf.[8]

> Matthews & Cohen's Argument (MCA):
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> (1) Assume that Sylvester is properly called a cat. In other words, 'Cat' is properly predicated of Sylvester.
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> ∴(2) 'Cat' is properly predicated of Sylvester, because Sylvester bears the participation relation to the Form of *Cathood*. [(P), (1)]
>
> ∴(2a) Sylvester bears the participation relation to the Form of *Cathood*.
>
> (3) The Form of *Cathood* is something "over against" Sylvester.[9]
>
> ∴(3a) The Form of *Cathood* is something other than Sylvester. [(3)]
>
> ∴(4) Sylvester must be something in his own right, independently of bearing a relation to Cathood. [(R), (2a), (3a)]
>
> (5) It is not the case that Sylvester is anything apart from the Form of *Cathood*.[10]

6   See Gail Fine (1981), which is a discussion of Armstrong's (1978) claim that strictly speaking, there is no relation involved in a thing's instantiating a universal. Armstrong weakens this claim somewhat in Armstrong (1989) claiming that there is a "fundamental nexus" which ties together universals and particulars. Armstrong (1997) seems to allow that instantiation counts as a fundamental relation. For further discussion of some of these issues, see chapter 1.

7   Matthews and Cohen (1968), p. 633.

8   Matthews and Cohen (1968) pp. 632-633. For a similar reconstruction of Matthews and Cohen's argument, see also Fine "Relational Entities" pp. 329-331 in *Plato on Knowledge and Forms*.

9   Matthews and Cohen (1968) p. 633. I am assuming that this claim represents Plato's view that the Forms are not only non-identical to, but independent of, each of the particulars. The former claim is all that we need for (MCA).

∴(5a) It is not the case that Sylvester is anything in his own right, independently of bearing the participation relation to Cathood. [contradiction between (4) & (5)]

Given a commitment to (P), Plato can avoid contradiction only by denying either (3)/(3a), (4), or (5)/(5a). Matthews and Cohen take Plato to be committed to (3)/(3a), and I will assume that it is reasonable to do so. According to Matthews and Cohen, once we see that this argument generalizes to every attribute that we might attribute to Sylvester, we can see that the denial of the analogue of (5)/(5a) in every case leads us to the position that Sylvester is a bare particular.

To get the generalized argument to work, however, we require a principle stronger than (R):

> (R*) If x bears relations $R_1,...,R_n$ to other entities $y_1,...,y_n$, and these are all the relations that x bears to other entities, then x must be something in its own right, independently of bearing $R_1...R_n$ to $y_1...y_n$.[11]

(R*) guarantees that x is something taken apart from *all* of its relations to other entities, and not just that for each of the relations that it stands in x is something apart from that relation.[12] I will assume that Matthews and Cohen intend the generalization of (R) to (R*), and hold that Aristotle relies on something like (R*) as well. So, Plato can deny (5)/(5a) only if he is willing to hold that Sylvester is something independently of all the relations that he bears to other objects. However, any predicate applies to Sylvester only because he stands in a relation to the Form signified by the predicate. So, Sylvester, in his own right, will not be a thing to which

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[10]   Matthews and Cohen (1968), p. 633.
[11]   Throughout this chapter, I give different interpretations of (R), and talk about arguments involving different formulations of (R). In each of these arguments, the general conclusion will require a generalized form of (R) akin to (R*). However, I will not state all the different formulations of (R*).
[12]   What does it mean to say that Sylvester is something independently of his bearing $R_1...R_n$ to $y_1...y_n$? Presumably, we mean not only that we can say that Sylvester is an individual, but that there is some way that Sylvester is independently of these relations. If we accept that Sylvester can be said to exist without reference to any of the relations that he bears to other things, but that there is no way that Sylvester is without reference to these relations, then Sylvester will be a bare particular. Whether it is even coherent to hold that there can be a totally bare particular is a difficult question. For some discussion, see Armstrong (1978) and Armstrong (1989).

any predicate applies. So whatever Sylvester is in his own right must be a bare particular. In fact, things might be even worse for Plato. If Sylvester counts as one thing only by bearing a relation to the Form of the *One*, then Sylvester in his own right might not even count as a single entity.

Plato could attempt to avoid contradiction by denying (4). However given (2a) and (3a), Plato can deny (4) only by denying (R). As a general principle, Matthews and Cohen admit that (R) is suspect. There are entities—e.g. shadows, reflections and thresholds—that are not anything independently of the relations that they bear to other things. For example, "Schubert's shadow's being what it is, in fact its very existence, is essentially tied to its bearing the relation it bears to Schubert."[13] Matthews and Cohen call entities like Schubert's shadow "relational entities". Plato faces the following dilemma about Sylvester: either he must maintain that Sylvester is a relational entity or he must hold that Sylvester is a bare particular.

Given a commitment to (P), Plato's best hope for escaping the contradiction in (MCA) would be to claim that Sylvester is a relational entity. For Aristotle to have a successful argument against Plato, therefore, he would have to do two things. First, he would have to show that his own theory is able to avoid the claim that Sylvester is a relational entity. Second, he would have to show that taking Sylvester to be a relational entity involves some kind of mistake. Matthews and Cohen claim that Aristotle can accomplish both these tasks.

According to Matthews and Cohen, Aristotle's own theory is supposed to jump through the horns of this dilemma that the (MCA) poses for Plato's theory. Aristotle is able to claim that Sylvester is neither a relational entity nor a bare particular. Furthermore, he is able to avoid being led to the contradiction in MCA by denying (2). Aristotle is able to deny (2), because he denies both (P) and the more general (P-). To

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[13]   Matthews and Cohen, p. 633.

deny (P-) is to hold that in some cases F can be properly predicated of *x,* and this is not because *x* bears a relation to anything other than *x*. In other words, Aristotle denies that a relational analysis of predication is possible in all cases.

More specifically, according to Matthews and Cohen, Aristotle does not think that a relational analysis is possible when we are talking about predicating the genus, species and differentia of an entity. While "Sylvester is grey," might admit of relational analysis, "Sylvester is (a) cat" does not admit of relational analysis. Rather, when we say that Sylvester is a cat, we are classifying Sylvester, and such classification is to be accounted for in a different way than is predicating a quality of Sylvester. In other words, we need to distinguish the nature of the truthmaker involved when we say truly, 'Sylvester is a cat,' from the nature of the truthmaker involved when we say truly that 'Sylvester is black.' According to Matthews and Cohen, the truthmaker for 'Sylvester is black,' involves a relation between Sylvester and something else, but the truthmaker for 'Sylvester is a cat,' does not involve any such relation. They write:

> In place of Plato's relational account Aristotle's doctrine of primary and secondary substance offers a nonrelational way of understanding what it is for Sylvester to be a cat. Every individual is an individual so-and-so. For Sylvester to be an individual is already for him to be a cat.[14]

This nonrelational understanding of what it is for Sylvester to be a cat is supposed to allow Aristotle to escape the dilemma that he poses for Plato. That is, Sylvester will be neither a bare particular nor a relational entity. We now turn to the question of whether Aristotle successfully escapes his own dilemma, and examine Fine's criticisms of Matthews and Cohen's argument.

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[14]   Matthews and Cohen, p. 635.

Section 10.3: Fine's Critique of Matthews and Cohen

Fine's critique of Matthews and Cohen's argument is two-fold. First, she claims that Aristotle's account of property possession by individuals is fully as relational as Plato's. On Fine's view, (MCA) commits Plato to holding that entities like Sylvester are relational entities only if it commits Aristotle to the same view. Second, Fine holds that there is no problem with the claim that Sylvester is a relational entity. I will develop each of these objections in turn.

First, it is unclear exactly why Aristotle's account is supposed to be nonrelational according to Matthews and Cohen. Aristotle does distinguish the truthmakers involved in predicating an accident of a thing from those involved in predicating the genus, species and differentiae of a thing. 'Sylvester is black,' is true because an instance of blackness inheres in Sylvester, and this clearly involves a relation between Sylvester and the nonsubstantial particular inherent in him. However, it seems that Sylvester's bearing a relation to something is also involved in the truthmaker for 'Sylvester is a cat.' After all, the latter sentence seems to be true because the species, *cat*, is said-of Sylvester. It is true that Aristotle thinks that the said-of relation is not the same relation as inherence, but isn't the said-of relation still a relation? Aristotle takes the said-of relation to be a relation that holds between a species and members of that species, and between genera and their subordinate species. Furthermore, Aristotle does not take the species *cat* to be identical to Sylvester. We would seem then to be able to construct the following argument against Aristotle.[15]

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[15]   I think that this argument captures Fine's claim that on a crude version of relational analysis, both Aristotle and Plato have relational analyses. The crude version of relational analysis holds that a state of affairs is susceptible to relational analysis if and only if the state of affairs is polyadic. Provided Aristotle holds that Sylvester's being a cat is a polyadic state of affairs composed of Sylvester and Cat, he seems committed to a relational analysis on the crude version of relational analysis. See Fine (1983), p. 328-331.

Parity of Reasoning Argument Against Aristotle (PRA):

(1) "Sylvester is a cat" is true.

∴(1a) Sylvester bears the converse of the said-of relation to *cat*. (from (1))

(2) *Cat* is not identical to Sylvester.

(3) For *x* to be able to bear any relation R to something else *y, x* must be something in its own right, independently of its bearing R to *y*. [(R)]

∴(4) Sylvester is something in his own right, independently of the fact that the species *cat* is said of him. [(1a), (3)]

(5) But, Sylvester is not something in his own right independently of the fact that the species *cat* is said-of him. [(4) contradicts (5)]

How is Aristotle supposed to avoid being led to a contradiction? Matthews and Cohen tell us that Aristotle's analysis of Sylvester's being a cat is nonrelational. Presumably, the nonrelationality of Aristotle's account is supposed to block the inference from (1) to (1a). We start out with the fact that Sylvester is properly called a cat. Say that the truthmaker for this claim is Sylvester's being a cat. There are two analyses that might be given to Sylvester's being a cat. Either we analyze the state of affairs in terms of something's inhering in Sylvester, or we analyze the state of affairs as something's being said-of Sylvester. Since we are dealing with the species of Sylvester, the proper analysis is in terms of *cat's* being said-of Sylvester. This is reflected in PRA (1). If Aristotle wants to reject (1a), he seems able to do so only by denying that *cat's* being said-of Sylvester consists in any sort of relation between Sylvester and cat. Matthews and Cohen endorse such a line of reasoning:

> …[W]here F is either a secondary substance or the differentia of some species, what it is for *x* to be F and for *y* to be F is not explainable by saying that *x* and *y* bear some relation to F-ness. Rather it is to be explained by reference to the idea of a completely fundamental classification. The fundamental character of this classification is brought out by saying that, instead of simply ordering individuals that have been somehow previously marked off as individuals, this

classification provides the terms in which individuals are said and seen to be individuals."[16]

Aristotle, according to Matthews and Cohen, must hold that Sylvester's bearing a relation to the species *cat* is not involved in the explanation of the truth of "Sylvester is a cat". There are two ways to take Matthews and Cohen's suggestion. We might deny that Sylvester stands in a relation to *cat* at all. Or, we might allow that Sylvester and *cat* stand in a relation, but deny that it is virtue of standing in this relation that Sylvester is properly called a cat.[17]

How could we deny that Sylvester bears a relation to the species *cat*, given what Aristotle says? Perhaps, to borrow a phrase from Armstrong, Matthews and Cohen take the tie between Sylvester and *cat* to be "closer than a relation", or to be a "nonrelational tie", or a "nonrelational nexus".[18] Whatever we call the *tie* between Sylvester and cat, Matthews and Cohen must deny that Aristotle thinks of it as a

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[16]   Matthews and Cohen (1968), p. 636. Matthews and Cohen's distinction between predicating a quality of an individual that has already been marked off, and giving the fundamental classification by which an individual is marked off as an individual in the first place resembles Sellar's discussion in "Substance and Form in Aristotle" (1957). Sylvester's even being an individual that can be a subject for properties already involves his being a cat.

[17]   In what follows, I endorse the second sort of view.

[18]   Armstrong in *Universals: An Opinionated Introduction* (1989) and especially in *A World of States of Affairs* (1997) allows that there is a relation between universals and particulars, but that this is a fundamental relation. Still, even if the relation is fundamental, we need to ask what the natures of its relata are supposed to be. Armstrong distinguishes between thin and thick conceptions of a particular, the particular taken without its properties and the particular taken together with its properties. Nevertheless, although we can conceive of particulars in different ways, we might still want to know what it is that is related to the universal. The same sorts of problems seem to come up about the *tie* between universals and particulars whether we call this tie a relation or something else. Considerations such as these lead Armstrong, most notably in *A World of States of Affairs*, to take states of affairs to be primitive entities and to take both universals and particulars to be derivative from states of affairs. The view that particulars and universals are both abstractions from states of affairs might be the ultimate destination of Armstrong's version of "nonrelational" realism. Armstrong seems to think that we should give the same account about all the properties that are possessed by an entity, and that we should accept nonrelational realism in all cases of genuine property possession. Aristotle, however, seems to distinguish between the cases in which a relational analysis is appropriate and cases where a relational analysis is not appropriate. Once we allow a difference in the accounts appropriate to different sorts of property possession, we can adopt something like Armstrong's combinatorial theory of possibility with vastly different results. I begin to sketch such a combinatorial account in section 10.4.C. For Armstrong's version of a combinatorial theory of possibility, see Armstrong *A Combinatorial Theory of Possibility* (1989).

relation in the sense referred to in (R). If we restrict (R) in some appropriate way, we cannot infer (4) from the fact that *cat* is said-of Sylvester.

I suppose that this is one way that Aristotle might try to escape the dilemma, but it seems somewhat *ad hoc* to stipulate that the said-of relation is not really a relation between a species and a member of the species. It seems similarly problematic to stipulate that the said-of relation is a relation, but that it is not the sort of relation to which (R) applies.[19] Even if we hold that the said-of relation is a fundamental relation, when we keep in mind that (R) is being deployed in the (MCA) against one of Plato's fundamental relations, it is hard to see why (R) cannot be deployed against Aristotle as well.

More importantly, Fine notes that Plato, like Aristotle, distinguishes essential from accidental predication. If we are going to say that essential predication for Plato is relational, shouldn't we say exactly the same thing about Aristotle?[20] Conversely, if we allow Aristotle to hold that essential predication is nonrelational, shouldn't we extend Plato the same courtesy? So far, then, we have not been able to distinguish Aristotle's view from Plato's. Anyone who hopes to defend Matthews and Cohen's position must draw a clear line between Plato and Aristotle. I turn to this task in sections 10.4 and 10.5.

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[19]   There are two things that might be going on here. We might restate (R) as:
         (R**) If x bears a contingent (non-essential) relation R to something else y, then x
         must be something independently of bearing R to y.
But, unlike (R), (R**) seems to be trivial. Furthermore, it is now hard to see why we now have any objection to Plato, who can easily hold that certain participation relations are essential. On the other hand, we might be stipulating that all relations are non-necessary, and that anything that seems to be a necessary relation does not actually count as a relation at all. However, it is unclear why we would be justified in making such a claim.

[20]   This rhetorical question is suggested by Fine's refined version of the definition of relational analyses. According to the refined version, x's being F is susceptible of relational analysis if and only if x's being F is polyadic, and it is not the case that x is essentially F. If we understand *x*'s being essentially F as *x*'s being F in every world in which x exists, then on the refined version of relational analysis, neither Plato nor Aristotle would think that Sylvester's being a cat can be given a relational analysis. I will suggest a notion of essentiality and relationality later in the chapter on which Plato but not Aristotle does think that Sylvester's being a cat is susceptible of relational analysis.

I suggest that both Aristotle and Plato accept that Sylvester stands in a relation to something in every possible situation in which he exists. Plato thinks that Sylvester participates in the Form *Cat* and Aristotle holds that the universal *cat* is said-of Sylvester. The difference between Plato and Aristotle is over whether or not Sylvester's standing in the relation in question explains or accounts for his being a cat. I will argue that Plato thinks that Sylvester's participation in the Form of *Felinity* explains his being a cat, while Aristotle thinks that *cat's* being said-of Sylvester does not explain his being a cat. Rather, for Aristotle, Sylvester's cathood is part of his primitive nonrelational nature, and his having this nature plays a role in explaining the fact that *cat* is said-of him.[21] I will turn to these issues in a moment. First, however, I want to examine an additional objection that Fine raises to Matthews and Cohen's interpretation.

While Fine thinks that it would be a problem for Plato to hold that Sylvester is a bare particular, she claims that there is no threat posed to Plato's theory by his denying (R), and claiming that Sylvester is a relational entity. To better appreciate Fine's point, let's take another look at what the denial of (R) commits Plato to.

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[21] As I have noted in earlier chapters, there is some tension between my claim that the said-of relation is fundamental and my claim that Sylvester's being a cat is a fundamental nonrelational fact about Sylvester that plays a role in explaining the fact that the species *cat* is said-of Sylvester. Nevertheless, I do not think that this tension is fatal. The said-of relation is a fundamental relation by which universals are constituted by particulars. We have the nonrelational fact that Sylvester is a cat. The fact that there are species at all, and that one of them, *cat*, is said-of Sylvester are additional facts about the world, and these facts do not reduce to the nonrelational facts about particulars. It might be helpful to compare the story that I am attributing to Aristotle with a certain sort of trope ontology discussed by Armstrong (1989). I think that Aristotelian particulars have a good deal in common with tropes insofar as both are particulars that have a certain nature nonrelationally. On one sort of trope theory, we have only tropes and primitive perfect resemblance relations. These relations of resemblance are said by Armstrong to be "internal" because the holding of the relation is not supposed to involve any ontological commitment beyond the existence of the relata. Once I have these two tropes with these particular natures, I already have perfect resemblance. The work that universals do in the ontology of a person who accepts universals is to be done by maximal classes of perfectly resembling tropes. I do not think that this is Aristotle's view. I think that Aristotelian universals represent a real ontological commitment beyond the particulars, and I think that the facts about what universals there are cannot be reduced to any collection of facts that does not include facts about the holding of the said-of relation. Nevertheless, I think that we can talk about the species *cat*, as the entity that bears the said-of relation to all and only the cats, and deny that what it is for each cat to be a cat is for the species to be said-of it.

If we deny a given substitution instance of (R), then we hold that there is an entity which bears a relation to another entity, and which is not something independently of bearing that relation to the other entity. However, Fine argues that we might have reasons independent of Plato's theory of predication for denying that (R) applies to Sylvester. For example, Fine tells us that if we agree with Kripke's views about the essentiality of origins, then we are already committed to the claim that Sylvester is a relational entity. Her argument runs as follows: Sylvester bears a relation to his parents, and Sylvester does not exist in any world where he fails to bear this relation to his parents. Therefore, it is not possible that Sylvester exist independently of his bearing this relation to his parents. Therefore, the relevant substitution instance of (R) for Sylvester is false, and Sylvester is a relational entity.

But, Fine argues, claiming that Sylvester is a relational entity in this case seems to be harmless. Even if we do not agree with Kripke's thesis about the essentiality of origins the mere fact that Sylvester would be a relational entity on his view does not constitute an effective objection to the thesis.[22]

In her argument, Fine construes independence purely in modal-existential terms. One thing's being something independently of standing in a relation to another is equivalent to its being possible for the first to exist without standing in this relation to the second. On this interpretation of what it is for a thing to be something in its own right, (R) can be more precisely stated as (R_F):

(R_F)   If x bears R another entity y, then it is possible for x to exist without bearing R to y.

As we saw above, for a thing to be a relational entity was for (R) to be false of that thing. Say that something is a relational entity if and only if (R_F) is false of that thing.

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[22]   See Fine (1983), p. 330.

It follows that for a thing to be a relational entity is simply for it to stand in a relation to something else in every world in which it exists.[23]

> (RE$_F$) x is a relational entity if and only if it is necessary that if x exists then x bears a relation to something.

However, we can distinguish two different claims that we might mean to make when we claim that it is necessary for a thing to stand in a relation to something else. These claims correspond to two different ways of placing quantifiers in (RE$_F$):

> (RE$_{FW}$) $\forall x(x$ is a *weakly* relational entity $\equiv \exists R \, \square \, (x$ exists $\supset \exists y \, (Rxy)))$

> (RE$_{FS}$) $\forall x(x$ is a *strongly* relational entity $\equiv \exists R \exists y \, \square \, (x$ exists $\supset Rxy))$[24]

(RE$_{FW}$) tells us that a relational entity is a thing that must stand in a particular relation to some entity or other in every world in which it exists. If something is a relational entity according to (RE$_{FW}$), we will say that it is a weakly relational entity. Any essentially physical entity might be a weakly relational entity, if it must stand in the location relation to some region space-time region or other in every possible situation in which it exists. (RE$_{FS}$) tells us that a relational entity is a thing that must bear a particular relation to a particular entity in every world in which it exists. We can call these entities strongly relational. On Kripke's view, I am a strongly relational entity in the sense given by (RE$_{FS}$), since I bear the child-of relation to my mother in every world in which I exist.

The notion of relational entity that Fine has in mind is the stronger notion defined by (RE$_{FS}$). Furthermore, Fine is surely right to claim that some relations are necessary to entities even when these entities are not things like shadow, thresholds or

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[23]   According to Fine, "…a relational entity is an entity that possesses at least one essential property relationally," Fine (1983) p. 327. As I take her claim, it is equivalent to the claim that a relational entity is an entity that has at least one relational property essentially, where an entity has a property essentially if and only if it has that property in every world in which it exists.

[24]   I suppose we could also have:

> (RE$_{F*}$) $\forall x(x$ is a relational entity $\equiv \square \, (x$ exists $\supset \exists R \exists y \, (Rxy)))$
> (RE$_{F**}$) $\forall x(x$ is a relational entity $\equiv \exists y \, \square \, \exists R \, (Rxy))$
> However, these principles will not play a role in the subsequent discussion.

laps. The number six seems to be greater than five in every world in which it exists, and the rock in front of me seems to be larger than its left half in every world in which it exists. If to deny an instance of (R)—the principle which Matthews and Cohen take to do central work in their argument—is simply to deny the corresponding instance of (R$_F$), then it is difficult to see how Aristotle differs from Plato, or to see why anyone should be worried about denying (R). (R$_F$) just does not seem to be a plausible principle. So, a second challenge that faces a defender of (MCA) is to show either that denying (R$_F$) in the case of concrete particulars really does lead to some problem, or to give an interpretation of (R) on which it says something other than (R$_F$). In the following sections, I follow the latter course of action.

I outline a different sense of independence, on which a thing can be something independently of bearing a relation to another thing even if the first bears the relation to the second in every possible world in which it exists. Furthermore, I argue that on the new sense of independence, Aristotle takes particular concrete individuals to be something independently of their relations to universals, while Plato denies that individuals are anything independently of their participating in Forms.

Section 10.4: Toward an Alternative Account of Relational Entities

This section has three parts. In the first part, 10.4.A, I examine David Armstrong's argument against relational versions of realism about universals, and Gail Fine's criticism of that argument. I agree with Fine that there is a critical flaw in Armstrong's argument, and I attempt to get clear on what Armstrong needs to do to have a successful argument against relational versions of realism about universals. Examination of Armstrong's argument and his conception of the nature of an object will reveal two importantly different conceptions of the nature of a thing. In addition, thinking through Armstrong's argument will reveal two different conceptions of intrinsicness. While I remain agnostic about whether or not Armstrong is correct to

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claim that particulars must have their natures independently of relations that they stand in to universals, I do think that we can adapt Armstrong's argument to form an argument that every ontology must accept some entity that has a nature independently of standing in relations to other things.

In order to get clearer on the sense of independence invoked in this section, I turn to some recent work on non-modal or definitional conceptions of essentiality. In section 10.4.B, I outline Kit Fine's theory of essentiality in terms of real definition. In section 10.4.C, I discuss essentiality in combinatorial terms. In each of these discussions, I am trying to get at a single underlying conception of essentiality. With this conception in place, I return to the discussion of Plato and Aristotle.

Section 10.4.A: Armstrong's Argument Against Relational Realism

One of the problems that Fine has with Matthews and Cohen's argument has to do with the seeming implausibility of (R_F). Why should we hold that any entity other than a bare particular cannot stand in a relation to another entity as a matter of necessity? Fine raises a similar question in her discussion of Armstrong's objections to relational versions of realism about universals in her paper, "Armstrong on Relational and Nonrelational Realism".[25] Because I think it will help illuminate our musings about Aristotle, I want to turn to Armstrong's argument against relational realism, and Fine's critique of that argument for a moment.

Armstrong claims that transcendent relational realism about universals—the view that particulars have their properties by bearing a relation to transcendent universals—entails that particulars have no natures of their own. Armstrong's argument runs as follows:

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[25]   Gail Fine "Armstrong on Relational and Nonrelational Realism" (1981).

Armstrong's Argument Against Relational Realism (AAA)

(1) Suppose that to possess a property is to bear a relation to a transcendent universal.

(2) For x and y to differ in any way is for x and y to possess different properties.

∴(3) For x and y to differ in any way is for x and y to bear relations to different transcendent universals.

(4) Any difference between x and y that consists in a difference in the objects to which x and y bear relations is a relational difference.

∴(5) All the differences between x and y are relational differences.

(6) Unless there is a nonrelational difference between x and y, x and y have exactly the same nature.

∴(7) So, x and y have exactly the same nature, and since x and y are arbitrarily chosen, all particulars have exactly the same nature.[26]

As Fine points out, there are a number of problems with this argument, the most glaring of which is the assertion of (6).[27] No one who accepts a relational account of property possession is also likely to accept the account of nature implicit in (6). Instead she will claim that for things to differ in nature *just is* for them to bear different relations to universals. Alternatively, someone could accept (6) but point out that "relational difference" is ambiguous. The Platonist is as likely as anyone else to hold that there is a difference between intrinsic properties like mass, and extrinsic properties like being taller than Socrates. The latter properties are often called "relational" or extrinsic properties, and we generally think that things that differ in their natures have to differ in properties other than these. However, according to the Platonist, both intrinsic and extrinsic property possession by a particular is to be accounted for in terms of a relation between particulars and universals. So (6) is true if

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[26]   We should understand 'x' and 'y' as bound by universal quantifiers with widest possible scope. I reconstruct this argument from Armstrong (1978) pp. 69ff, cited in Fine (1981), p. 264 ff. See also Armstrong's discussions of bare particulars in Armstrong 1989, and Armstrong 1997.

[27]   This is similar to an objection in Fine (1981), p. 265, where she criticizes the restriction of natures to nonrelational properties.

by 'nonrelational difference' we mean a difference in intrinsic properties, but false if we mean a difference that is accounted for without reference to relations to transcendent universals.[28] However, on the former construal of 'relational difference', (4) and (5) are both false.

If Armstrong is going to push his point against the relational realist, he will have to show that there is a conception of nature on which the relational account of property possession renders it impossible for particulars to have different natures. To put the point differently, Armstrong must show that the relational account of property possession somehow runs afoul of our intuitive notion of what it is for an object to have an intrinsic nature. What Armstrong needs is an argument to show that an account on which all particulars have the natures that they do by bearing relations to universals is committed to the claim that all particulars have the same nature.

I am not sure whether Armstrong can develop such an argument. However, I think that it is possible to defend the weaker claim that at least some entities in any ontology must have natures that are not relational. In other words, there must be some entities, the nature of which is not constituted by the relations that they bear to other entities. Insofar as it is possible to make true claims about the natures of these entities, we need some account of truthmaking in the case of these claims that does not involve relations between distinct entities. Armstrong needs a stronger claim than the one that I will defend—he needs a claim that *particulars* must have nonrelational natures. However, on the view that I will defend, particulars might have the natures that they do by bearing relations to universals, while universals have their natures nonrelationally.

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[28]   Another way of accounting for the ambiguity would be to claim that there is a difference between fundamental relations, like instantiation or participation, and ordinary relations, like being taller than or being to the left of. I think that the second way of accounting for the ambiguity is preferable to the first. Furthermore, I think that Armstrong will need to talk about fundamental relations as well.

In the course of defending the weaker claim, we will develop the conceptual resources necessary to rescue (MCA) from one of Fine's objection, viz. the objection that Aristotle and Plato are on the same footing with respect to the argument. If Plato accepts (P), the claim that everything that we can truly say about a particular is made true by the fact that the particular participates in a Form, then particulars will be relational entities for Plato. If Aristotle holds that at least some of the true claims that we can make about the natures of particulars are not made true by the holding of a relation between the particular and another entity, then particulars will be nonrelational entities for Aristotle. On the other hand, I do not think that we can develop a reply to Fine's second objection, viz. that Plato needn't take his ontology to be significantly undermined by (MCA). Plato can still accept that there are entities that have the natures that they do nonrelationally, provided that he takes these entities to be Forms rather than particulars. In the absence of an argument that *particulars* must have nonrelational natures, Plato needn't be overly worried about (MCA). While I hope to establish that Plato and Aristotle have different fundamental ontologies, I will not be able to settle the issue with respect to whose ontology is superior in this dissertation. I begin my discussion by trying to get clearer on our use of the term 'nature'.

We can note a certain ambiguity in the use of the term 'nature'. Armstrong claims that the nature of an object is "…the complete conjunction of a particular's properties, itself a property."[29] As Fine notes, this understanding of nature is compatible with the claim that it is part of an object's nature to bear a relation to a universal. In fact, as we have stated it so far, this conception of nature is compatible with the claim that an object's bearing relations to other objects is part of its nature. However, we would not normally want to count every relational property of an object

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[29]   Armstrong (1978), Volume II, p.173.

as part of its nature. For example, the fact that I am three feet from a computer screen, or in the same room as a glass of water, does not seem to be part of my nature.

As a first step, we need to distinguish intrinsic properties from extrinsic properties. Furthermore, we need to do so in a way that is compatible with various accounts of the metaphysics of property possession. For example, as we noted above, we need an account of intrinsic property which allows the relational realist to distinguish intuitively intrinsic properties from intuitively extrinsic properties.

We might follow David Lewis and claim that a thing's intrinsic properties are the ones that it shares with all of its possible duplicates, where duplicates are understood to be objects that share all their perfectly natural properties.[30] One problem with Lewis' proposed definition is that we need to help ourselves to a notion of *perfect naturalness*. However, I will ignore this problem in what follows and assume that we have some idea of both duplication and naturalness.[31] We should note that Lewis' gloss on intrinsic properties seems to be neutral on the underlying metaphysics of property possession. It is consistent with this understanding of intrinsicness that a thing possesses all its intrinsic properties by standing in a relation of instantiation to a universal.[32] We will call a property "duplicate intrinsic" (d-intrinsic) if it is intrinsic in this sense.

> (Duplicate Intrinsic) A property, P, is d-intrinsic if and only if any
> possible duplicate of any possible entity possessing P must possess P.

We can contrast the understanding of intrinsicness developed above with that developed by Lewis and Langton, according to which an intrinsic property will be one

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[30]   See David Lewis "Extrinsic Properties" (1983a), "New Work for a Theory of Universals" (1983b). See also Ted Sider "Intrinsic Properties" (1993); See also Brian Weatherson's entry in the *Stanford Encyclopedia of Philosophy*, "Intrinsic and Extrinsic Properties".
[31]   Lewis (1983b) seems content to rest with a very tight circle of definitions. He will define intrinsic in terms of duplication, duplication in terms of naturalness, and stipulate that all natural properties are intrinsic. See Lewis and Langton (1998) p344-345.
[32]   This not Lewis' view. He takes properties to be sets of *possibilia* and takes naturalness to be a primitive attribute of some of these sets.

that an object can possess independently of whether it is lonely or accompanied.[33] An object is lonely if and only if it is the only entity in a world, and accompanied if and only if it is one of a plurality of entities in a world. We can define what it is for a property to be "independence intrinsic" or i-intrinsic in the following way:

> (Independence Intrinsic) A property, P, is i-intrinsic if and only if the possession of P by any possible entity is independent of whether or not it is the only entity that exists.

We should notice that this definition does rule out certain views about the metaphysics of intrinsic property possession. For example, it seems to rule out an understanding on which a particular has an i-intrinsic property by bearing a relation to a universal. If an entity has a given property only by bearing a relation to a universal, then the entity cannot have that property in any world in which the universal fails to exist. Therefore, nothing can have the property in a world in which it is lonely and the property is not an i-intrinsic one.

If we want to talk about the nature of a thing as the complete conjunction of its properties without letting in problematic properties like being 3 feet from a computer screen, we should confine ourselves to the thing's intrinsic properties. If we take the intrinsic properties of a thing to be those properties that are i-intrinsic, Armstrong's argument against relational realism goes through very quickly. So, for the moment let's say that the properties that are part of a thing's nature are the d-intrinsic properties.[34] Armstrong allows that some of the properties that belong to a thing's

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[33] See David Lewis and Rae Langton "Defining Intrinsic" (1998). This article is an attempt to rescue a suggestion by Jaegwon Kim in "Psychophysical Supervenience" (1982) from objections raised by Lewis (1983a) and (1983b). Kim originally defined intrinsic properties as those properties that could belong to an unaccompanied thing. However, as Lewis (1983a) notes, being unaccompanied seems to be a non-intrinsic property.

[34] There is some indication that Armstrong intends us to understand natures to be confined to d-intrinsic properties. In his comments on thick and thin particulars, for example, Armstrong tells us that thick particulars involve nonrelational (d-intrinsic) properties in a way that they do not involve relational (d-extrinsic) properties. See Armstrong (1978) and (1989).

Armstrong's argument for this claim is a curious one, given the fact that he seems to include contingent properties in the natures of entities. He tells us that particulars are supposed to meet Hume's

nature are accidental properties. These are properties that the entity does possess but which it could fail to possess. The nature of a thing on this understanding of 'nature' is the its total d-intrinsic character. This gives us the following as a definition of a property's being part of a thing's "d-intrinsic nature" or dn-nature:

> (NAT$_1$) A property, P, is part of a thing, x's, dn-nature $=_{df}$ P is an d-intrinsic property of x.

In addition to the sense of 'nature' given in (NAT$_1$), there is a common use of the word 'nature' to refer to the essence of a thing. What belongs to a thing's nature is supposed to be a stable and necessary feature of a thing, whereas other features are merely accidental to it. On one common way of understanding essentiality in modal terms, a property is essential to a thing if and only if the thing has that property in every possible situation in which it exists. The properties that belong to a thing's nature are the properties that it possesses in every possible situation in which it exists. On this understanding of 'nature', we get the following definition of what it is for a property to be part of a thing's "necessity nature" or n-nature:

> (NAT$_2$) A property, P, is part of a thing, x's, e-nature $=_{df}$ x could not exist without possessing P.

It is clear that these two understandings of 'nature' can come apart. A property can be part of a thing's dn-nature, but fail to be part of a thing's e-nature. There can be accidental d-intrinsic properties, and necessary d-extrinsic properties.

I want to suggest a third understanding of the term 'nature', and use it to analyze the differences between Aristotle and Plato's accounts of property possession,

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criterion for substances—they must be logically capable of independent existence. But in a world where a given particular was the only thing that existed, it would not have any of its relational properties. Therefore the relational properties are not "part of the being" of a particular in the way that the nonrelational properties are. This argument makes it seem as though necessary possession of a property is a necessary condition for a property's being part of a thing's nature. But, in that case, no accidental property at all should be part of a thing's nature, including accidental d-intrinsic properties. See Fine (1981) p265 for a similar objection, and further discussion. Furthermore, if Armstrong is using "relational property" in a way that includes all properties that are not i-intrinsic, his argument will be valid, but his premise will be something that no relational realist will accept.

and between relational and nonrelational theories of property possession in general. The problem with taking a thing's dn-nature to be its nature is that too many accidental properties then count as part of a thing's nature. Understanding a thing's nature as its e-nature, however, is also problematic. There are all sorts of predicates that characterize a thing in every possible world, but which do not intuitively seem to be part of the nature of that thing. For example, 'Sylvester is a thing existing in a world where 2+2=4,' is true in every possible world in which Sylvester exists. However, we do not think that this sentence reveals anything about the nature of Sylvester.

The third conception of nature that I want to develop has something in common with each of the first two, but does a better job of capturing what we ordinarily mean in talking about the nature of a thing. The properties that belong to the nature of a thing are the properties that are necessary to it, and which it has because of what it is. These seem to be the properties that are both intrinsic to a thing, and necessary to that thing. However, we will get different results if we understand intrinsic properties as d-intrinsic properties than we will if we understand them as i-intrinsic properties.

We might simply conjoin the requirements given in (NAT_1) and (NAT_2) above and claim that the properties that belong to a thing's nature are those d-intrinsic properties that a thing has in every possible world in which it exists. We can call such a property part of a thing's dn-nature:

(NAT_3) A property, P, is part of a thing, x's, dn-nature $=_{df}$ P is a d-intrinsic property and x could not exist without possessing P.

Because we have defined a thing's dn-nature in terms of d-intrinsicness, whether a property counts as part of a thing's dn-nature is independent whether we give a relational or nonrelational account of property possession.

Alternatively, we can hold that a property is part of a thing's nature only if it is an i-intrinsic property that the thing possesses necessarily. We can define in-nature as follows:

> (NAT$_4$) A property, P, is part of a thing, x's, in-nature $=_{df}$ P is an i-intrinsic property, and x could not exist without possessing P.

The properties that are part of a thing's in-nature are those properties that it possesses both necessarily and independently of any relations that it bears to other things.[35] Whether a property belongs to the in-nature of a thing does depend on the underlying metaphysics of property possession. No property that a thing has by bearing a relation to a universal will be an i-intrinsic property of that thing. Therefore, no property that a thing has by bearing a relation to a universal will be part of the in-nature of a thing.

In (AAA), Armstrong argues that a relational account of property possession for particulars commits us to the claim that all particulars have the very same nature. Armstrong's conclusion follows if we take the nature of a thing to be its in-nature. It seems to me that the correct response to (AAA) by the relational realist is to agree that all particulars have the same in-nature. However, the relational realist can still distinguish the properties that belong to the dn-nature of a thing from the properties that belong to a thing accidentally. For Armstrong's argument to be successful, he would need to show that there is a problem with taking all particulars to have the same in-nature. I do not know whether or not such an argument can be developed. However, I do think that we can develop an argument that some of the entities in our ontology have to have in-natures.[36]

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[35] Necessary possession of a property seems to follow from the i-intrinsicness of the property. If a thing has a property independently of whatever else exists, then it would seem to have that property in any possible situation in which it exists in which case the property is part of its n-nature.

[36] Furthermore, unless we think that only one thing has an in-nature, it will also be the case that some things differ from each other with respect to their in-natures.

Let's say that all particulars have their attributes by standing in the fundamental relation of instantiation to universals. Furthermore, let's say that particulars typically have different dn-natures. It follows that particulars stand in an instantiation relation to some universals in every world in which they exist. Furthermore, it is in virtue of their standing in these relations that particulars have the dn-natures that they have. For example, it belongs to Socrates' dn-nature to be human, and it belongs to Sylvester's dn-nature to be a cat. Socrates' being a human in any world is his instantiating the universal *humanity* in that world. Sylvester's being a cat in any world is his instantiating the universal *felinity* in that world. We are now in a position to ask the following question of the relational realist: why is it that standing in the instantiation relation to *felinity* makes something a cat, while standing in the same relation to *humanity* makes something a human? Presumably, the relational realist will answer that the universal *humanity* is a different sort of thing than the universal *felinity*. We can now ask how we account for the natures of the universals. Either the universals will have distinct in-natures, or they differ only in relations that they bear to other things. But then differences between the universals *humanity* and *felinity* must be explained by differences in the things to which they are related.

We are now in a position to formulate a classic trilemma. Either we have an infinite regress in which the nature of each thing is explained by its relations to some further thing, the nature of each thing is to be explained by its relations to other things but there is a circle of explanations, or we have some things that differ primitively with respect to their in-natures and we explain the differences between the natures of other things in terms of these primitive differences. On the first two options, I do not think that we will have an adequate explanation for differences in the natures of

things. So there must be some entities that differ with respect to their in-natures.[37] It remains to defend my claim that the first two options fail to explain differences in the natures of things.

There are two problems with the infinite regress version of relational natures. First, there is the problem of ontological profligacy. We need to accept infinite hierarchies of entities in every case where we need to explain a difference between entities. Second, it is unclear that these infinite hierarchies will actually succeed in explaining anything. If at each point in the regress, we lack an explanation for differences in the natures of things, making the regress infinite does not seem to help.

Furthermore, there are infinite regresses involved in the explanation of each nature. For simplicity imagine that each entity instantiates only one higher-order universal. Sylvester is the way he is because he instantiates something, which instantiates something, and so on. Socrates is the way he is because he instantiates something, which instantiates something, and so on. In what way does the infinite totality of entities involved in the explanation of Sylvester's nature differ from the infinite totality of entities involved in the explanation of Socrates' nature? I can see no way in which it does. In each case, we have an infinite regress in which at every point we lack an adequate explanation for the nature of the particular entity. I conclude that the difference in nature between Socrates and Sylvester has not yet been explained.[38]

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[37]   Strictly speaking, there is a fourth option. We might explain all the differences between the natures of things relationally, but hold that there are different fundamental relations that things can stand in to each other. For example, *humanity* and *felinity* might not differ in their in-natures, but the differences between Sylvester and Socrates will be explained by the fact that Socrates stands in the "*manstantiation*" relation to *humanity* while Sylvester stands in the "*catstantiation*" relation to *felinity*. However, I can see no reason for adopting this view rather than one on which either particulars or universals differ with respect to their in-natures.

[38]   The second argument against an infinite regress of things the natures of which are all explained relationally is similar to the argument against ontological structuralism below. Any infinite chain in which each thing is supposed to have its nature explained by something else will be structurally isomorphic to any other infinite chain.

The other alternative that avoids primitive differences in the in-nature of things attempts to account for differences in the natures of things by allowing circular explanations. A thing will have the nature that it does because of its location in a web of relations. We might call such a view "global ontological structuralism". Global ontological structuralism seems subject to the following objection familiar from arguments against causal structuralism about the individuation of properties.[39] It will be impossible for there to be two different possible situations containing objects with different natures that stand in the same pattern of relations to each other.

For the sake of an example, imagine two different possible worlds each of which contains exactly two objects. In the first worlds, Sylvester instantiates *felinity*,

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[39] For a discussion of causal structuralism, see John Hawthorne "Causal Structuralism" (2001). Radical causal structuralism is the view that all there is to the identity of any property is its contributing certain conditional causal powers to the objects that possess it. However in stating the conditional causal powers definitive of any property, we need to talk about other properties, which in turn can be replaced with the statement of the causal powers that they bestow on entities possessing them. In the end, we end up with something like a Ramsey sentence in which every referent to a property has been replaced with a variable, and we have only a statement of a causal structure with no reference to any particular properties. The Ramsey sentence will be similar to the statement of the natures of worlds 1 and 2 below.

If we think that it is possible for two or more different sequences of properties to satisfy the resulting Ramsey sentence, then it seems that something other than the pattern of causal relations is needed to individuate properties. Radical causal structuralism is often attributed to Sydney Shoemaker on the basis of his paper, "Causality and Properties" (1980) reprinted in *Identity, Cause and Mind* (1984). However, according to an appendix to Hawthorne (2001), Shoemaker suggests a more moderate form of causal structuralism on which we can define a property in terms of its causal relations only if we maintain reference to the other particular properties to which it stands in these relations. We will not be able to identify all sequences of properties satisfying the same Ramsey sentence with one another. On the moderate picture, while it will be necessary to a property that it bear certain relations to other properties, it will not be the case that the natures of all the properties involve nothing other than there standing in a certain pattern of relations to something or other.

We can distinguish two versions of moderate structuralism. On one version purely haecceitistic qualities will be all that distinguish two distinct properties that stand in the same pattern of relations to other properties. Properties might all have the very same in-nature, but there will be brute facts about which property is which. The other version will allow that there are differences between the in-natures of at least some distinct properties and that part of what explains the differences between two properties standing in the same pattern of causal relations is that they stand in these patterns to things that have different natures. On the latter version of moderate causal structuralism, we will have some entities that differ in their in-natures. On the former version, I cannot see how bare numerical differences in the things to which two properties stand in causal relations can account for anything other than a numerical difference between the two properties. We will not have explained any way in which the nature of one property differs from that of another.

and *felinity* is instantiated by Sylvester. In this world, Sylvester has the nature that he does because he instantiates *felinity*, and *felinity* has the nature that it does because it is instantiated by Sylvester. So Sylvester has the nature that he does because he instantiates something that is instantiated by him. So, Sylvester has the nature that a thing has when it has the property of instantiating something that instantiates it. Similarly *felinity* has the nature that a thing has when it is instantiated by something that instantiates it. We can represent the nature of Sylvester and *felinity* as follows:

Nature of Object 1: λx[∃y(Ixy & I*yx)]

Nature of Object 2: λx[∃y(I*xy & Iyx)]

Similarly we can represent the nature of the entire world as follows:

Nature of World 1: ∃u∃v(λx[∃y(Ixy & I*yx)]u & λx[∃y(I*xy & Iyx)]v)

Now imagine a world that contains only Socrates and *humanity*, in which Socrates instantiates *humanity*. This is a world in which the very same pattern of relations holds as held in the world containing Sylvester and *felinity*. Therefore, the nature of this world can be expressed as follows:

Nature of World 2: ∃u∃v(λx[∃y(Ixy & I*yx)]u & λx[∃y(I*xy & Iyx)]v)

Worlds 1 and 2 have precisely the same nature as one another.[40] However, this result is intuitively incorrect. The intuition that these worlds have different natures is very difficult to shake. One of them contains a particular cat, and the property of *felinity*. The other contains a particular human being and the property of *humanity*.[41]

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[40]   Notice that it won't help to try to distinguish the two worlds by pointing to purely haecceitistic differences. While such differences might be useful in numerically distinguishing Sylvester from Socrates, or *humanity* from *felinity*, they will do nothing to explain the qualitative differences that we intuitively take to hold between worlds 1 and 2.

[41]   Alternatively consider a world that contains Socrates, Sylvester, *humanity*, and *felinity*. The purely relational nature of Sylvester and Socrates will be the same, and the relational natures of *humanity* and *felinity* will be the same. We seem to have no capacity to explain what accounts for the differences in the natures of things. What makes it the case that one of the particulars is a cat and the other a human being? Furthermore, there seems to be no good reason to rule out the possibility of such symmetrical worlds. This example here seems similar to Hawthorne's (2001) objection against causal structuralism from the possibility of worlds with symmetrical patterns of conditional causal power distribution.

Furthermore, there is no good reason to rule out *a priori* the possibility of two worlds in which the same patterns of relations are realized by things with different natures. But if we cannot rule out this possibility, then global ontological structuralism would seem to be false.

Two horns of our trilemma have proven to be problematic. We can't accept an infinite regress of relational explanations of the natures of things, nor can we accept circular explanations of the natures of things. The only option left is to accept that at least some things differ with respect to something other than the things to which they are related. In other words, at least some things differ with respect to their in-natures. Notice, however, that nothing in the argument given requires that it is particulars which differ from each other in their in-natures. It is completely open to the relational realist to claim that universals rather than particulars are the things that differ with respect to their i-intrinsic properties. As I will argue below, it is plausible to attribute this sort of view to Plato.

First, however, I want to outline a conception of essentiality that differs from the modal conception of essentiality implicit in the formulation of (R_F), (RE_{Fw}), and (RE_{FS}). In the following two sections, I will outline a conception of essentiality, which has been developed by Kit Fine.[42] On Fine's view, essentiality is not defined in modal terms, but is defined in terms of the real definition of an entity. Modality is, in turn, to be defined in terms of essentiality. With the definitional conception of essence in

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[42] See Kit Fine "Essence and Modality" (1994b), "Senses of Essence" (1994c), "Ontological Dependence" (1995a), "The Logic of Essence" (1995c), "Semantics for the Logic of Essence" (2000). See also Fabrice Correia "Propositional Logic of Essence" (2000), and "Generic Essence, "Objectual Essence, and Modality" (2006). I became aware of the second article by Correia after writing this chapter. Correia's distinction between the objectual essence and generic essence strikes me as a important one, and much of what I say here could be reformulated with this distinction in mind. In making statements about the objectual essence of a thing, we reveal what it is to be that thing; for example, we reveal the objectual essence of Socrates when we tell you that he is a rational animal. In making statements about generic essences, we say what it is for something to be of a certain sort; for example we reveal the generic essence of being a human when we say that being human is being rational and animal.

place, we can give a different account of what it is for an entity to be a relational entity than we were able to give above. Furthermore, on this conception of what it is to be a relational entity, we will be able to distinguish Plato's view about the nature of particulars from Aristotle's.

Section 10.4.B: Essence as Real Definition

It has been quite common among philosophers to give a modal analysis of essentiality.[43] The claim, 'x is essentially F,' is understood as the claim that it is necessary that x is F. 'It is necessary that x is F,' however, is ambiguous between a categorical and a conditional reading. Taking a possible-worlds semantics of modality for granted, the categorical and conditional readings can be represented by (ME1) and (ME2) respectively.[44]

> (ME1) For any object, x, and property, F, x is essentially F, if and only if x is F in every possible world.

> (ME2) For any object, x, and property, F, x is essentially F, if and only if x is F in every possible world in which x exists.

Both (ME1) and (ME2) are subject to certain difficulties. If we accept that x can be F, only in worlds where x exists, then (ME1) will entail that only necessary existents have any properties essentially. On the other hand, (ME2) entails that every entity is essentially existent, since every entity exists in every possible world in which it

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[43]   At least it has been popular among philosophers in the analytic tradition since Saul Kripke, Ruth Barcan Marcus, and others developed a rigorous way of treating *de re* modal claims, and provided a highly natural way of thinking about claims about the essences of things independently of the way that those things are described, thus repopularizing what Quine calls an invidious Aristotelian essentialism, in his "Three Grades of Modal Involvement" (1953), see also Quine's "Reference and Modality" (1961). See Kripke "Semantical Considerations on Modal Logic" (1963a), "Identity and Necessity" (1971), *Naming and Necessity* (1972)/(1980); Marcus "Modalities and Intensional Languages" (1961); Alvin Plantinga "World and Essence" (1970), *The Nature of Necessity* (1974); and Graeme Forbes *The Metaphysics of Modality* (1985).

[44]   The observation of the two readings and the attendant difficulties of each are further discussed in Fine (1994).

exists.[45] Neither of these complaints is decisive, but a proponent of either (ME1) or (ME2) owes us some account of how the complaints are to be dealt with.

Kit Fine offers two additional arguments against a modal understanding of essentiality.[46] The first argument attempts to show that modal conceptions of essentiality allow too many irrelevant properties into the essence of an entity. The second attempts to show that there are certain asymmetries in relations between objects that cannot be captured on a modal conception of essentiality. We shall look briefly at each of these arguments.

First let us consider Fine's relevance objection to modal conceptions of essence. Take any necessary fact at all, e.g. the fact that 2+2=4. Take the property, *being such that 2+2=4*. In every possible world, this property will belong to every object in that world. Therefore, the property will be essential to every object. However, being such that 2+2=4 seems entirely irrelevant to the nature of most objects, and we might balk at allowing such irrelevant properties to be part of a thing's essence. [47]

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[45]   Some people have no problem with this result. Forbes (1985), who seems to accept (ME2), claims that there is no problem holding that all entities are essentially existent provided we do not take this to imply that all entities are necessarily existent. Furthermore, it might be open to a defender of (ME2) to insist that this argument mistakenly treats existence as a property of objects. I am not sure what we should say about this issue.

[46]   See Kit Fine (1994), (1995a), and (1995b).

[47]   There are interesting connections between the sorts of charges of irrelevance lodged against modal conceptions of essence, and similar charges lodged against ordinary understandings of entailment. K. Fine (1994) seemingly balks at simply adding relevance constraints to ordinary modal logic as an attempt to save modal conceptions of essence. However, Fine's logic of essence (1995c) seems very much like a modal logic with relevance constraints added to the modal operators. Fine thinks that his system grounds the imposition of these sorts of constraints by holding that the truth of essentiality claims is grounded in the real definitions of entities. His objection to adding relevance constraints to ordinary modal logic really seems to be aimed at the attempt to add relevance constraints without producing a metaphysical justification for their addition. Any attempt to justify the imposition of relevance constraints on ordinary modal logic will have to be based in something other than modality. In conversation Fine claimed that his point is that any attempt to justify adding relevance constraints to deal with objections to modal conceptions of essence will need to be grounded in something like a definitional conception of essence.

Second, let us consider Fine's asymmetry argument. Fine uses the example of Socrates and the set {Socrates}. We seem to be able to say both that Socrates is a member of {Socrates} in all worlds where he exists, and that {Socrates} has Socrates as a member in all worlds in which {Socrates} exists.[48] However, there seems to be a certain asymmetry when we think about the essences of Socrates and {Socrates}. It seems that what it is to be the set {Socrates} just is to be something which has Socrates as its only element.[49] Conversely, it does not seem that what it is for a thing to be Socrates just is for it to be the thing that is the sole member of a certain set.[50] One natural way of expressing this fact would be to claim that *being the set containing only Socrates* is [part of] the essence of {Socrates}, but that *being the sole member of {Socrates}* is not [part of] the essence of Socrates. Given the modal conception of

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[48] Although, see David Lewis *Parts of Classes* (1991), where he claims that on some counterpart relations, the counterpart of α will not be a member of the counterpart of {α}, and that the necessity will, therefore, not hold under these counterpart relations. I find Lewis' views about this pretty baffling, and will assume that, at the very least, α is an element of {α} in every world in which α exists. I am not sure whether {α} exists in any worlds where α does not exist, and whether, if {α} does exist in an α-free world, it has α as a member in that world. I am assuming that α is a member of {α} in every world where {α} exists. There are many difficulties in the example that might arise due to disagreements about the nature and existence of sets, but I think that the example makes the main point about the distinction between necessity and essentiality relatively clear.

[49] The language here recalls Aristotle's use of '*to ti ên einai*' ('the what it was to be'), '*to ti esti*' ('the what it is') and '*to einai* +dative complement' ('to be for ____') in talking about the essences of things. Fine takes his thoughts about essence to be deeply Aristotelian in spirit.

[50] The following considerations also support our thinking that there is an important asymmetry at issue between singletons and their members. Knowledge of what the set {α} is in itself, seems to be enough to justify our claim that {α} contains α. Furthermore, knowledge of what the set is in itself seems sufficient to justify us in claiming that α exists in any world where {α} exists. On the other hand, in addition to knowing what α itself is like, we seem to have to know something more to know that α is a member of the set {α}. We have to know something about singletons, viz. that a singletons are sets that contain exactly one object. Furthermore, knowledge of what α is in itself, will not justify us in claiming that {α} exists in every world in which α exists. In addition, we need to know something about the existence conditions for sets. In each case, we seem to need to know something beyond the nature of α to be justified in beliefs about {α}, while the converse is not the case. Furthermore, it is natural to distinguish {α} from another set {β} by pointing out that one is the set containing α and that the other is the set containing β. On the other hand, it would seem to be odd to distinguish α from β by pointing out that they are members of different sets.

essence, however, we have no way of expressing this asymmetry in the relationship between Socrates and {Socrates}.[51]

Both Plato and Aristotle hold that when we reveal the essence of a thing, we say what that thing is. But it just doesn't seem to be the case that part of what it is to Socrates is to be the thing that is the sole member of a certain set. Furthermore, being such that 2+2=4 does not seem to be part of the nature of Socrates. It seems, therefore, that the mere fact that a thing possesses a property in every world is insufficient for belonging to the essence of a thing.

The definitional conception of essence solves both the relevance and asymmetry problems raised for the modal conception of essence. The fact that 2+2=4 is not part of the real definition of Socrates, shows that it is not essential to Socrates that he be a thing such that 2+2=4. Furthermore, while it does seem to belong to the real definition of {Socrates} that it contain Socrates, it does not seem to be part of the real definition of Socrates that he be contained by {Socrates}. The definitional conception of essence is in accordance with our intuitions in these cases. However, we still need a more illuminating account of what it is for a property to belong to the essence of a thing.

K. Fine develops a rigorous account of essentiality by drawing an analogy between analyticity and essentiality.[52] We will begin with a brief discussion of analyticity. Consider the following definition of what it for a sentence to be analytic.

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[51] The asymmetry noted here is also used by K. Fine to define a type of ontological dependence on which an item can be ontologically dependent on something that exists in all and only the possible worlds where it exists. See Fine (1995a). Notice that Aristotle is aware of a similar asymmetry. As we saw in Chapter 9, Aristotle allows that one object can be ontologically prior to another even in cases where the two reciprocate as to the implication of existence, provided that the first is somehow the cause of the existence of the second. I do not think that we can adequately capture Aristotle's view with a possible worlds conception of essentiality.

[52] See Fine (1994), (1995b), (1995c), and (2000). See also Correia (2000). In Fine (1994), he suggests that analyticity and essentiality are at bottom the very same thing.

(AN1) A statement is analytically true if and only its truth follows from the meanings of our terms.[53]

As it stands right now, (AN1) fails to be precise in an important way. Say that the meaning of a term is a set of definitional sentences. The truth of a sentence follows from the meaning of a term if and only if the sentence is entailed by the set of definitional sentences for that term. There is one notion of analytic truth which we could take to be expressed by (AN1), on which the set of analytically true sentences is the set of sentences entailed by the definitional sentences for every term in a language. However, there is room for a finer-grained notion than this one. A sentence can be true in virtue of the meanings of some terms rather than others. For example, the truth of 'All bachelors are unmarried,' seems to have nothing to do with the meaning of 'dog', but seems to have something to do with the meaning of the term 'bachelor'. In order to capture this finer-grained notion, Fine introduces the notion of a sentence's being *analytic in a set of terms*.

(AN2) A sentence, s, is analytic in τ (a set of terms) if and only if the set of all the definitional sentences for all members of τ entails s.[54]

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[53] We might replace (AN1) with a more rigorous definition suggested and subjected to rigorous criticism by Quine in his paper "Two Dogmas of Empiricism" (1951). We can begin with a notion of a sentence's being a truth of logic. A sentence is truth of logic only if it is a logically valid sentence, i.e. if and only if the sentence is true on every interpretation of its non-logical vocabulary. Next, we need a notion of sameness of meaning for expressions in a language. We can then give a more rigorous formulation of (AN1) as follows:

(AN1*) A sentence is analytic if and only if it can be transformed into a truth of logic by freely substituting for the expressions in the sentence expressions with the same meaning.

Quine claims that the distinction between analytic and synthetic sentences cannot be maintained because there is no proper notion of sameness of meaning available. For further discussion of analyticity, see also Quine's "Truth by Convention" (1936), "Carnap and Logical Truth" (1956), Hilary Putnam's (1965) "The Analytic and the Synthetic", and Paul Bogohossian's "Analyticity Reconsidered" (1996) and "Analyticity" (1997).

[54] The notion of entailment involved here is a purely logical one, as opposed to metaphysical necessitation. '2+2=4' is not entailed by the sentence '∀x (Bachelor (x)≡Unmarried(x) & Male(x))', even though the latter is true in all and only the worlds where the former is true. There is still a worry about sentences that are logical truths. Any logical truth follows from the meaning of any term at all. I will set this worry aside, but I think that we might need to put relevance constraints on the notion of entailment in (AN2).

Notice that what sentences are analytic in a set of terms is crucially dependent on what the definitional sentences for the relevant terms are.[55] We will call the set of all the definitional sentences in a language a "Dictionary" for that language. Take the following as a proposal about the proper definitional sentences for a chunk of a language.

Dictionary 1:

Term	Set of Definitional Sentences for Term
Bachelor:	{'$\forall x$(x is a bachelor $\equiv$ (x is a man & x is unmarried).'}
Unmarried:	{'$\forall x$(x is unmarried $\equiv$ it is not the case that x is legally wed.'}
Man:	{'$\forall x$(x is a man $\equiv$ (x is a male & x is human).'}
Human:	…
Married:	…
…	

If Dictionary 1 is correct, then the sentence 'All bachelors are unmarried men,' will be analytic in {'bachelor'}, but will not be analytic in {'unmarried'}, {'man'}, or {'unmarried', 'man'}. Perhaps, however, Dictionary 1 is not the correct about the definitional sentences, and we can consider an alternative.

Dictionary 2:

Term	Set of Definitional Sentences for Term
Unmarried:	{'$\forall x$(x is unmarried $\equiv$ (x is a bachelor $\vee$ x is a spinster)'}
Man:	{'$\forall x$(x is a man $\equiv$ (x is at least 16 years old & x is not a spinster & x is not a wife)'.}
Bachelor:	{'$\forall x$(x is a bachelor $\equiv$ (x is an adult male human & x is not a husband & x is not a widower)'}

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[55] On this view, we can see the reluctance to accept analytic truth as a reluctance to accept that certain sentences about a thing count as definitional.

If Dictionary 2 is correct, then 'All bachelors are unmarried men' will be analytic in {'unmarried', 'man'}, but not in {'bachelor'}. Questions about what sentences are analytic in a given set of terms will be answerable only once we are given a dictionary for the relevant chunk of a language. However, there might be good reasons for preferring one dictionary to another; for example, Dictionary 1 is surely more plausible than Dictionary 2. [56]

We can define analyticity in terms of analyticity-in. A sentence is analytically true if and only if it is analytic in the set containing all the terms of the language. On the other hand, we cannot define analyticity-in in terms of analyticity. So, if we think that it is plausible to claim that a sentence can be true due to the meaning of some terms rather than others, we should take analyticity-in as a basic notion, and take analyticity to be a derivative notion.[57]

Fine recommends the following analogy: essentiality is to necessity as analyticity-in is to analyticity. We can take a necessary proposition, and we can ask what makes the proposition true. The truthmakers for necessary proposition will involve the natures of some objects, and will not involve the natures of others. Socrates' being a man has something to do with the nature of Socrates, but nothing to do with the nature of any mathematical objects. Just as individual terms were said to have canonical definitions in our discussion of analyticity-in, individual entities have essences or real definitions. Just as analyticity-in was relativized to sets of terms, essentiality or 'necessity-in' can be relativized to sets of entities.

> (DE1) A proposition is necessary-in a set of objects, if and only if the
> truth of the proposition follows from the real definitions of the objects
> in the set.

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[56]   If we think that there is no fact of the matter about which dictionary is correct for a language, then we will think that there is no fact of the matter about which sentences are analytic in which sets of terms. I will leave aside questions about whether there is a unique correct dictionary for any language.

[57]   This is a bit too quick. However, Fine considers attempts to take analyticity as a more basic notion in (1994), and argues convincingly that they fail.

(DE2) For any object, *x,* and proposition P, it is essential to *x* that P if and only if P is necessary-in {*x*}.

(DE3) For any object, *x,* and property, F, *x* is essentially F, if and only if the proposition that *x* is F is necessary-in {*x*}.[58]

(DE3) is offered as an alternative to (ME1) and (ME2), and we can see that there might be attributes that *x* has in every possible world, which are not essential to *x* according to (DE3). Any attribute that a thing has in every possible world, the possession of which is not implied by the real definition of a thing, will be a necessary but non-essential attribute of that thing.

What propositions are necessary-in what things will depend on what the essences or real definitions of objects are, and there are substantial disagreements on this score. Take the example of Socrates and {Socrates}, and compare two different theories about the natures of sets and individuals. According to the first theory, it belongs to the real definition of a set that it have exactly the members it does. {Socrates} just is the object that has Socrates as its sole member. According to the same theory, say that the essence of Socrates is his soul—to be Socrates is to be the being with this soul. Then the proposition that Socrates is a member of {Socrates} will be true in virtue of the nature of {Socrates}, but will not be true in virtue of the nature of Socrates. It is not part of Socrates' nature to belong to any set.

However, this theory might be mistaken about the natures of Socrates and {Socrates}. If we had a theory on which individuals like Socrates were simply abstractions from sets, we would have a different answer to the question: In virtue of what is the proposition that Socrates is a member of {Socrates} true? If to be Socrates just is to be the sole member of {Socrates}, then the proposition that Socrates is a member of {Socrates} will be true in virtue of the nature of Socrates. Part of the task

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[58]   We might be more careful about use and mention in (DE3). Where ⌜φ⌝ is a predicate and ⌜α⌝ is an individual constant, ⌜It is essential to α that α is φ⌝ is true if and only if the proposition expressed by ⌜α is φ⌝ is necessary in the singleton of the referent of ⌜α⌝.

of ontology, then, is to figure out the correct real definitions of objects. For example, the first theory is surely more plausible than the second.

Once we have the idea of necessity-in, we can define necessity *simpliciter* as truth in virtue of the nature of all objects whatsoever. On the other hand, we will not be able to begin from the ordinary modal conception of necessity, and define essentiality. We are better off, therefore, taking the real-definitional understanding of essentiality as primitive and defining necessity in terms of it.[59]

With this understanding of essentiality in terms of real definitions in place, we can do two things. First, we can state a new version of Matthews and Cohen's principle (R) in terms of essentiality:

> (R_E) If x bears R to a distinct entity, y, then it is not essential to x that x bear R to y.

If we put (R_E) explicitly in terms of real definitions, we get:

> (R_{RD}) If x bears R to a distinct entity, y, then it is does not follow from the real definition of x that x bears R to y.

Second, we can outline a new conception of what it is for an entity to be a relational entity. An entity is relational if and only if the relevant substitution instance of (R_E) and (R_{RD}) fails. An entity will be a relational entity if and only if it is essential to that entity that it bears a relation to a distinct entity. In terms of real definitions, an entity is relational if and only if it follows from the real definition of that entity that it bears a relation to a distinct entity.

Just as we distinguished weakly and strongly relational entities in (RE_{FW}) and (RE_{FS}), can also distinguish weakly relational entities from strongly relational entities on the essentialist picture:

> (RE_{EW}) $\forall x$(x is a weakly relational entity$\equiv \exists R$(It is essential to x that $\exists y$(Rxy)))

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[59] For further elucidation of the definitional conception of essence, see Fine (1994), and (1995b). For a formal logic of essence see Fine (1995c), and for a semantics, see Fine (2000).

(RE$_{ES}$) ∀x(x is a strongly relational entity≡ ∃R∃y(It is essential to x that
Rxy))

(RE$_{RDW}$) ∀x(x is a weakly relational entity≡
∃R(It follows from the real definition of x that ∃y(Rxy)))

(RE$_{RDS}$) ∀x(x is a strongly relational entity≡
∃R∃y(It follows from the real definition of x that Rxy))

We can now restate Matthews and Cohen's challenge to Plato in terms of
essentiality. If all attribute possession is a matter of bearing a relation to a distinct
entity, then either there are no attributes that Sylvester has essentially or it follows
from Sylvester's real definition that there is a certain entity to which he bears a
relation. In the latter case, Sylvester will be a strongly relational entity. In what
follows, we will examine how Matthews and Cohen's argument fares given (R$_E$).
However, first let us turn to an alternative way of thinking about essentiality which
will be helpful in our subsequent discussion.

Section 10.4.C: A Combinatorial Approach to Essentiality.

In this section, I present a series of toy models designed to elucidate the
concept of essentiality by analogy. We can begin with a model that contains two types
of objects, colored pegboards and pegs with heads of different geometric shapes. Say
that we have three pegs: round, square, and triangular [r,s,t], and two pegboards: blue
and crimson [B, C]. Further say that each pegboard can hold anywhere from zero to
three pegs. Say that we want to model some portion of a language using this peg-
pegboard system. The language will have three individual names {'Ralph', 'Sara',
'Tom'}, and two predicates {'blue', 'crimson'}. We'll say that every individual
constant in the language refers to a peg, an element of {r,s,t}. Every predicate term
refers to a pegboard {B,C}. Where ⌜Φ⌝ is a predicate term and ⌜α⌝ is an individual
constant, any atomic sentence of the form ⌜α is Φ⌝ is true if and only if the object
referred to by ⌜α⌝ is in the pegboard referred to by ⌜Φ⌝. We can add ordinary induction
clauses for the logical connectives, and extend the language to allow quantification

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over {r,s,t} and {B,C}. Furthermore, let's allow that 'Ralph', 'Sara' and 'Tom' rigidly designate respectively r, s, and t, and 'blue' and 'crimson' likewise rigidly designate the blue and crimson pegboards.

On the assumption that which hole in a pegboard a peg occupies is not a relevant difference between arrangements, there are 27 ways to arrange our five objects. The pegs and pegboards are combinatorial atoms, which can be arranged to make certain sentences in our language true or false. Notice, however, that these combinatorial atoms have an intrinsic nature. In every one of our models, r is a round peg, s is a square peg, t is a triangular peg, B is a blue pegboard and C is a crimson pegboard. While the various relations between the pegs and pegboards vary from model to model, the natures of the pegs and pegboards themselves are constant. However, the intrinsic natures of the pegs and pegboards are not relevant to the truth and falsity of any of the sentences in the language that we introduced above.[60]

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[60] The combinatorial system that I outline here differs in many respects from that offered by Armstrong in his *A Combinatorial Theory of Possibility* (1989). First, Armstrong, following Skyrms, in "Tractarian Nominalism" (1981), takes states of affairs to be the most basic entities. A state of affairs is non-mereologically constituted by a particular and a universal. Armstrong insists that the particular in the state of affairs and the universal do not stand in any relation to each other, rather they are *too closely connected to be related*. Nonetheless, Armstrong allows that we can distinguish the universal and particular parts of a state of affairs.

Armstrong allows that each universal is an entity that has a nature and differs from other universals, but claims that every thin particular is in itself indistinguishable from every other thin particular. Rather, particulars taken as thin particulars, are simply numerically different than one another. Notice, that thin particulars seem to have all the problems that Armstrong associates with the particulars that he says are posited by relational realism, whether transcendent or immanent. These particulars, that is, have no nature independently of standing in the *nonrelational* connection to various universals. While Armstrong's thin particulars are simply numerically different from one another, these particulars are not bare because they cannot exist without instantiating at least one property. But at this point, we can raise the same objection to Armstrong that he raises for the relational realist—Armstrong tells us that the relational realist needs an explanation for the nonexistence of bare particulars, and that the relational realist can only hold that it is a brute synthetic necessity that no bare particulars exist. However, we can ask Armstrong why thin particulars are unable to exist uninstantiated. It seems he will need to posit as synthetic and brute a necessity as the one purportedly relied on by the relational realist. So, if Armstrong wants to hold that states of affairs have universals and particulars as real components, it is unclear why his theory is superior to the relational realism that he attacks.

Armstrong might escape the problems above by claiming that universals and particulars are not real components of states of affairs. He can claim instead, that states of affairs are primitive, and that both universals and particulars are simply abstractions from these states of affairs (see Armstrong (1997) for a defense of this view). However, if he does so it is unclear that he can maintain his version

However, imagine that we now expand our language to contain some new predicates, 'is triangular', 'is square', and 'is round'. Furthermore, say that a sentence of the form ⌜α is triangular⌝ is true if and only if the peg referred to by ⌜α⌝ has a triangular head, and so on. Notice that while 't is triangular' and 't is blue' are syntactically indiscernible, the underlying truthmakers for the sentences are different—'Tom is blue' is true in any model where t is inserted in B, 'Tom is triangular,' is true in any model containing t because of the intrinsic nature of t itself.[61] The truthmaker for the first sentence involves a relation between t and something else, while the truthmaker for the second involves only the nature of t. So, the intrinsic natures of the objects that are available for recombination in our models guarantee certain facts about every possible combination of the objects.

Notice that the nature of the combinatorial relation taken together with the nature of the combinatorial atoms will guarantee other facts about every possible

of combinatorialism. The advantage of combinatorialism is supposed to consist in its giving a theory of possibility in terms of actual entities. Can the combinatorialist still claim this advantage if the entities to be recombined are themselves simply abstractions from actual entities? If the basic entities are states of affairs, then shouldn't states of affairs, not particulars and universals, be the entities that are available for recombination? On the other hand, if particulars and universals are available for recombination, then doesn't there have to be something that each of these is like taken apart from any combination?

      We can criticize the picture that Armstrong gives of his combinatorial system. He tells us that there is a board, in which we stick hooks that represent individuals. We then hang markers on these hooks to represent universals, and connect hooks by pieces of colored string to represent relations. In this model, the hooks are entities that have a nature, even if it simply the ability to bear various markers. Hooks are different sorts of things than strings and markers, and presumably particulars are intrinsically different than universals in the analogous respect. Armstrong also tells us that the mere switching of one hook for another does not represent a difference between models. But it is unclear why this is supposed to be so. I seem to be able to say truly that there used to be one hook here, and now there is another. All that the truth of this statement relies on is the bare numerical difference of the hooks. It is one thing to claim that the numerical identity of a hook is not relevant to making true sentences in our actual language. It is a different thing to claim that there is no possible extension of our language on which the numerical identity of a peg could play a role in making true a sentence. What Armstrong might reply is that the hook model fails to be analogous in an important respect to the world which actually models our sentences.

[61]   We might also allow, in addition to sentences like 'Ralph is blue,' a sentence 'Blue is blue,' where the latter is taken as an instance of predication telling us what the referent of 'blue' is like, rather than as an identity claim. Despite the fact that both sentences contain 'is blue' the first is true in any model where r is inserted in B because of a relation that r bears to B, the second seems to be true because of the nature of the blue pegboard itself. Pegboards are blue or not blue because of their intrinsic natures, pegs are only blue or not blue by bearing or failing to bear a relation to a pegboard.

model. For example, no peg can be inserted in two pegboards—it follows that there is no model making true 'Ralph is crimson and Ralph is blue'. No peg can both be inserted and fail to be inserted in a given pegboard. Still other sentences like 'Ralph is crimson,' are made true by some models due the specific way in which the pegs are combined with the pegboards in those models.

What is necessary is what is true in all possible models. What is essential to an object is what is true in all possible models because of the intrinsic nature of that object. So on the system of models that we are looking at here, "It is essential to Tom that Tom is triangular," is true, but "It is essential to Tom that Tom is not both blue and crimson," is false. "Tom is not both blue and crimson," is true in every model, but the fact that it is true in every model does not follow from the intrinsic nature of t.

We could also add further constraints to our construction of models. For example, we might accept as a primitive rule governing acceptability of models that every pegboard must contain at least one peg.[62] This additional rule will eliminate 15 of our original 27 possible combinations. Notice, however, that whether such a rule on acceptable models obtains is independent of the natures of the pegs and the pegboards. Given the above limitation on acceptable models, 'Something is blue,' will be true in every acceptable model. 'Tom is triangular,' will also be true in every acceptable model. Nonetheless, the sources of these truths will be different facts about the models. While 'Tom is triangular,' is true in every model because of the nature of the

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[62]   Such additional rules seem to be what is involved in what Armstrong calls "synthetic necessity" in "Against Ostrich Nominalism" (1980). See Gail Fine (1981) for some discussion p267ff. Armstrong claims that a relational account of property possession cannot rule out bare particulars and uninstantiated universals. On his view, if instantiation is simply a relation that holds between distinct entities, then the natures of the entities themselves does not guarantee that every universal be instantiated and that every particular instantiate some universals. Any necessity of instantiation will then be akin to our no empty pegboards rule. But, Armstrong tells us that such additional rules, and the "synthetic necessities" to which they give rise, are unmotivated. See note 57 above for additional discussion.

peg referred to by 'Tom', the former sentence will be true in every model because of the presence of the additional rule in our system.

So far, all of the entities that we have considered are combinatorially independent of one another. However, we might have a model in which this feature was not present. For example, take the holes in the pegboards as the referents of our individual names. A claim that something has a color will be true if and only if the hole referred to by the name is in the appropriate pegboard. A claim that something has a shape will be true if and only if the appropriately shaped peg is in the hole referred to. Holes do not seem to be combinatorially independent of the pegboards that serve as their hosts. To even specify a hole as an entity for recombination is to specify a thing that by its very nature bears a relation to the pegboard that it is in. Similarly, given that the pegboards are exactly the same in all models, we cannot even specify a pegboard for recombination without specifying a thing that has certain holes in it. When it follows from the intrinsic nature of an entity that it stands in a relation to something else, the entity stands in that relation essentially.

When we shift our thinking from the toy models above to the world that actually serves as a model for our claims and think about the ways in which the entities in our world could be recombined, we start to get a picture of what sorts of things are essential to objects. For a thing to have an attribute essentially is must be the case that there is no acceptable recombination of entities on which the entity lacks that attribute, and it must be due to the nature of the entity independently of all the things from which it is combinatorially independent. If an entity cannot even be specified for recombination independently of its bearing a relation to distinct entity, then it will be a relational entity.

To think a bit more about what it is for an something to be a relational entity on this picture, I want to return to an earlier example used to distinguish essentiality

from necessity. Take the object {Socrates}. At least on some understandings of the nature of sets, what it is to be {Socrates} just is to be the object that bears a certain relation to the object Socrates—call this relation "singletoning".[63] It is not merely the case that {Socrates} singletons Socrates in every possible world, or singletons Socrates in every possible world where {Socrates} exists. Rather, to be {Socrates} just is to be the thing that singletons Socrates.

Let's look at another model. Imagine that we have a model in which ordinary objects are represented by tennis balls. To form the singleton of an object we attach a red marker to the object. To form a singleton of the singleton, we attach a red dot to the first red dot, and so on.[64] So if 'Socrates' refers to a tennis ball '{Socrates}' refers to that tennis ball with the red dot attached. However, the red dot on the tennis ball is not the referent of any term at all in our language. Now imagine that we pick out the singleton of an object for recombination. What we are picking out is a ball with a red dot attached—{Socrates} is represented as a ball-with-attached-dot. It follows from the very nature of the singleton, that if we grab it to stick in a model we have to also grab the object that it is the singleton of. On the other hand, we can pick out ordinary objects for recombination without thereby picking out their singletons. Again, this is not to claim that there are any acceptable models containing Socrates but not {Socrates}. But whatever it is that makes such models unacceptable, it is not the

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[63]   There are a number of difficult issues about sets here, and I do not want to take a stand on any of them. Just what the singleton relation is supposed to be is a really thorny issue. See Lewis, *Parts of Classes* (1991) for additional discussion. In any case, I am simply trying to use the case of sets to illustrate a point about essentiality. If you believe in real definitions, and think that the real definition of {α} is *the thing that singletons α,* then bearing the singleton relation to α is essential to {α}. In this section, I am arguing that the fact that {α} cannot even be specified for recombination independently of singletoning α

[64]   Compare this model to Lewis's "Lasso Hypothesis" in Lewis (1991) pp42-45, where a singleton of an object is that object surrounded by a lasso. I do not know whether this model will adequately capture set theory, even if we let in spooky objects like lassos. What is essential about these models is that singletons of objects are formed by something's being done to those very objects. It seems that the singletoning relation is internal to the singleton, but external to the thing singletoned—where internal and external can both be given essentialist glosses. A relation to an entity is internal to an object if and only if it is essential to the object that it stands in that relation.

nature of Socrates. Rather, in this case there seems to be a rule akin to the 'no empty pegboards' rule, which tells us that every object in a model has a singleton in that model. The fact that {Socrates} is a singleton of Socrates is modeled in our system by the fact that a tennis ball with a red dot on it has that tennis ball as a constituent. Not only is it true in every acceptable model that this tennis-ball-plus-dot has this tennis ball as a part, it follows from the very nature of this tennis-ball-plus-dot that it stands in this relation. {Socrates} is not even combinatorially independent of Socrates. I take this fact to be another way of stating that {Socrates} stands in the singletoning relation to Socrates is essentially.

I suggested above that we might restate (R) in terms of (R_E), and I said that (R_E) was equivalent to a principle stated in terms of real definitions. We might also restate (R) in combinatorial terms:

(R_C) If x stands in a relation R to a distinct entity $y,$ then x's standing in R to y does not follow from the nature of x taken as a subject for recombination.

(R_C) amounts to an assertion that every entity which can be recombined is combinatorially independent of every other entity with which it can recombined. In other words, every entity in the world is a combinatorial atom, i.e. a thing that is combinatorially independent of every other entity in the world. Any differences between the natures of combinatorial atoms, considered independently of any relations that they stand in to other things, will consist in differences between the i-intrinsic features of the entities. Furthermore, differences between the in-natures of things will be differences between those things taken as combinatorial atoms.

As we have already seen, (R_C) does not imply (R_F). Even if x's essence is independent of any relation that x stands in to $y,$ it might still be the case that x stands in the relation to y in every possible model. However, the source of the necessary connection between x and y will not be found in the nature of x taken as a

combinatorial atom.[65] (R_C) is false of an entity only if it is impossible to specify that entity for recombination without thereby specifying it as a thing that stands in a certain relation to something else.

Relational entities are entities that are not combinatorial atoms. For an entity to be a relational entity, on this picture, is for it to follow from its nature, considered as a subject for recombination, that it stand in a certain relation to another entity. In other words, without specifying any additional restrictions on acceptable recombination, the mere fact that we want to include an entity in a model guarantees that we are including in our model a distinct entity that stands in a particular relation to this entity. For example, without any further restrictions on recombination it follows from the very presence of {Socrates} in a model that {Socrates} singletons Socrates. In such a case, we would say that {Socrates} is combinatorially inseparable from standing in the singletoning relation to Socrates. We might define being a strongly relational entity in terms of combinatorial inseparability as follows:

> (RE_{CS}) $\forall x(x$ is a strongly relational entity $=_{df}$
> $\exists R \exists x(x$ is combinatorially inseparable from y, and to specify x
> as an entity to be recombined is to specify it as an entity that
> stands in R to y))[66]

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[65]   The source of necessity might be something like the axioms about acceptable combinations in the peg/pegboard system, which seems to be some kind of brute synthetic necessity. When Armstrong questions the necessity of such synthetic necessities, we can see his argument in something like the following terms: given that are certain combinatorial possibilities are precluded, we can ask why they are precluded. Shouldn't the metaphysical impossibility of a combination depend on something about the natures of the things to be combined? For example, take the relation of insertion as the combinatorial relation. The reason that B can't be combined with C has to do with the natures of B and C; pegboards just aren't intrinsically of the right sort to be inserted into each other. So the no pegboard-pegboard combination seems to have a basis in the nature of the entities in the system and the nature of the combinatorial relation. On the other hand, the no empty pegboards axiom seems to have no basis in any other facts about the system. To put this restriction on acceptable combinations seems entirely brute. If we balk at such brute restrictions, we have to pay some cost to accept necessary non-essential combinations. I'm not sure that we should balk at such brute restrictions.

[66]   It is significantly more difficult to say what it is for an entity to be weakly relational on the combinatorial picture. It order to characterize what it is for an entity to be weakly relational, we need to think in terms of building a model out of entities rather than in terms of specifying an entity for recombination already present in a model. For an entity to be a weakly relational entity is for the it to have a nature that precludes its being present in a model without its standing in a specific relation to

In talking about essences in terms of real definitions and in terms of possibilities for recombination, I have been trying to get at one underlying conception of essentiality. An attribute will be essential to an object if the object's possessing the attribute follows from the real definition or identity of that object.[67] Thinking about recombination provides a way of thinking about what is involved in the real definition of an object. When we ask what belongs to the essence of an object, we are asking what sorts of things are guaranteed to be true of an object given its availability for recombination? On the picture that I've sketched above, the things that are guaranteed to be true of an object in this way are essential to it. I take (R_C) and (R_{RD}) as equivalent glosses of (R_E), and I want to restate Matthews and Cohen's argument taking (R) as (R_E) rather than as (R_F). [68]

Section 10.5: Restating Matthews and Cohen's Argument

According to Matthews and Cohen, Plato thinks that all attribute possession by a particular is a matter of that particular's participating in a Form. Let's attempt to understand this account of attribute possession in combinatorial terms. Plato allows that are certain entities that are Forms, e.g. the Form of *Viciousness*, and other entities that are particulars, e.g. Sylvester. "Sylvester is vicious," is true because the entity

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some entity or other in that model. It needn't be the case that it is combinatorially inseparable from any particular entity in any particular model. On the assumption that it belongs to the nature of any physical entity to have some extension, then presence of any essentially physical entity in any model requires that it have some location or other. Every essentially physical entity is, therefore, weakly relational.

I am not entirely happy with the account above. In talking about weakly relational entities, the definitional account of essentiality is easier to work with. The difficulty of giving a clear account of weakly relational entities in combinatorial terms might make it necessary to abandon the claim that the combinatorial account and the definitional account of essentiality are interchangeable. The main problem seems to be that combinatorial inseparability is a relation that holds between entities, it isn't possible to bear the relation to something or other without bearing the relation to a specific thing. In the discussion of Matthews and Cohen's argument, strong relationality will be the only sort of relationality at issue. However, weak relationality will become important in the discussion of Aristotelian universals later in the paper.

[67]   In talking about the identity or real-definition of an object, I am trying to get at the same thing, what the object is. While Aristotle does not think that individuals can have definitions, I will sometimes use the term real definition when talking about particulars.

[68]   Subject to some doubts expressed in note 66.

Sylvester and the entity *Viciousness* are appropriately combined. In other words, Sylvester participates in *Viciousness*.

In our discussion above, we took the peg **t** and considered it apart from its standing in any combinatorial relations to pegboards. We saw that this peg had a nature, e.g. it was triangular rather than round, and that this nature was constant through all possible recombinations of **t** with other entities. We also saw that it was possible to claim that facts about the nature of **t**, rather than facts about the combinatorial relations that **t** bore to other things could play a role in making certain claims true.

If we consider our own world as a model, we can ask whether Sylvester has a nature independently of the relations that he bears to other entities. We are now in a position to restate something like the dilemma that underlies Matthews and Cohen's argument. If Sylvester, specified as a combinatorial atom, has such a nature, then his having that nature is independent of how he can be recombined with any Form. So, there is something about Sylvester that is not to be explained by his bearing a relation to a Form.[69] But what if we insist that every time we truly predicate anything of Sylvester, we do so only because of a relation that Sylvester bears to a Form? In this case, Sylvester, taken as a combinatorial atom, seems to have no attributes at all.[70]

We have one other option. We can insist that Sylvester has any attribute at all only by bearing a relation to the appropriate Form, and further say that Sylvester, specified as a subject for recombination, does have a nature. However, we must then

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[69]   We need not insist that it is possible for Sylvester to exist without entering into certain relations with other things. As I noted above, there can be other restrictions on what combinations are acceptable ones. However, even if it is necessary that Sylvester stand in certain relations to other entities, it need not part of Sylvester's essence that he enters into such relations. The source of the necessity in this case will not be the nature of the Sylvester atom, but is something else about the system. Similarly, I need not insist that Socrates can exist in a world where {Socrates} does not exist in order to deny that his belonging to the set is an essential property.

[70]   At least he has no attributes that qualitatively, as opposed to numerically, differentiate him from anything else.

deny that Sylvester is by nature combinatorially independent of every Form. For at least some Forms, the Form of *Felinity* will be a prime example, we cannot even specify Sylvester as a subject for recombination without thereby specifying a thing that stands in a relation to this Form. It follows that Sylvester will not be a combinatorial atom. Rather, Sylvester will strongly relational entity in the sense of (RE$_{ES}$). Plato will have to deny the substitution instance of (R$_{ES}$) for Sylvester and *Felinity*.

(R$_E$) tells us that no entity can essentially bear a relation to a distinct entity. We have already seen a counterexample to (R$_E$) as a general principle. {Socrates}, for example, is not even combinatorially independent of Socrates, since it belongs to the essence of {Socrates} that it bears the singleton relation to Socrates. On the other hand, Socrates is combinatorially independent of {Socrates}, and it does not follow from his real definition that he stands any relation to {Socrates}.[71] As a result, {Socrates} is a relational entity in the senses of (R$_E$), (R$_{RD}$) and (R$_C$).[72]

According to the argument attributed to Aristotle by Matthews and Cohen, Plato's commitment to (P) and (P-) commits him either to the existence of bare particulars, or to the claim that objects like Sylvester are relational entities. We have already seen that (R$_E$), on which the current formulation of Matthews and Cohen's

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[71]   Why is it the case then that Socrates belongs to {Socrates} in every world where he exists? This necessity seems to be external to the nature of Socrates and would seem dependent on something like a principle of set composition—$\forall x \exists S$ x is the only member of S. What makes this principle true? Is it a fact about the membership relation? Can we then say that the fact that Socrates belongs to {Socrates} follows from the nature the membership relation?

    A similar question arises in the case of mereology. Say that AB is the sum of A and B, and that sums exist in all and only the worlds where all the parts of the sums exist. The claim "If AB exists then A and B exist," seems to follow from the nature of AB. What about the claim "If A and B exist, then AB exists"? This seems to follow from a principle of unrestricted composition. If a principle of unrestricted composition is true, what is it true in virtue of? Is it true because of the nature of the summing function?

[72]   Other relational entities might be things like: the life of Socrates, the beliefs of Socrates, the functioning brain of Socrates. Anything whose very nature consists in its bearing a certain relation to Socrates, will be a relational entity in the sense under consideration. Similarly, if the essence of Socrates is to bear a relation to something, then Socrates will be a relational entity.

argument depends, is not a true generalization. Any argument that relies on (R_E) as a premise, therefore, will be unsound. Matthews and Cohen realize as much, when they point to objects like Schubert's shadow as relational entities. Nevertheless, they claim that it is simply implausible to say that Sylvester, or any other similar entity of the sort that Aristotle would count as a primary substance, is a relational entity. Let's call entities like Sylvester, entities that Aristotle would count as primary substances, 'ps-entities'. In essence, to formulate a sound argument, Matthews and Cohen need the following restricted version of (R_E).

(R_E*) If x is a ps-entity, and x bears R to y, then it is not essential to x that x bear R to y.

As we saw in the example above Plato can hold onto (P-) and can hold that ps-entities have a nature, only by denying (R_E*). Does Aristotle have any argument that we should accept (R_E*)? Matthews and Cohen claim that Aristotle argues for (R_E*) in chapter 7 of the *Categories*, by arguing that no primary substances are relatives (*ta pros ti*). However, I do not think that the relational entities that we have been examining should be identified with the relatives discussed by Aristotle in the *Categories*.[73] First, Aristotle's category of relatives does not even seem to be extensionally equivalent to the class of things that are relational entities according to his ontology. Relatives are only one of nine categories of accident enumerated in the *Categories*. However, Aristotle seems to take *all* nonsubstantial entities to be relational entities in the sense of (RE_E). For example, every nonsubstantial particular inheres in a particular substance, and it follows from the very nature of that nonsubstantial particular that it bears the inherence relation to its substance. So the

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[73] For some additional Aristotelian arguments involving relatives, see Alexander's commentary on Aristotle's *Peri Idiôn* in his commentary on Aristotle's *Metaphysics*, and Gail Fine's commentary on the relevant passages in Alexander in her *On Ideas* (1993), especially chapter 13. I am not sure how to assimilate the notion of relatives in that passage with the notion of relatives in the *Categories*.

instance of *pallor* in Socrates is combinatorially inseparable from Socrates, and it is part of this pallor's essence that it inhere in Socrates.[74]

Every accident inheres in a substance, and I will argue that it follows from the very nature of the accident that it could not exist without inhering in this substance.[75] Relatives are distinguished from other accidents by the fact that it belongs to their nature to stand in a relation of correlativity to another relative. For example, the instance of *taller* in Phaedo inheres in Phaedo, but also implies the existence of the instance of *shorter* that inheres in Socrates. Relatives are, therefore, doubly relational entities. [76]

Furthermore, the relation of correlativity that characterizes relatives seems to be a symmetrical relation. An entity is a relative if and only if it is spoken of in relation to a correlative that reciprocates—i.e. if it is spoken of in relation to the first entity. However, this symmetry need not be present in the case of relational entities. An entity *x* is a relational entity if and only if it follows from the essence of *x* that *x* bears a relation to *y*. It need not also follow from the essence of *y* that *y* bear a relation to x.[77] At best Aristotle's denial that ps-entities are relatives would show that they fail

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[74]   Two notes are needed here. First of all, particulars are not things that Aristotle takes to have definitions as he uses the term 'definition'. Nevertheless, I take it that the very nature of Socrates' pallor involves its inhering in Socrates. In this case, the fact that the pallor inheres in Socrates does not explain its qualitative nature which do not differentiate it from any other instance of pallor, but its inhering in Socrates is involved in its being the particular thing that it is. Secondly, in chapter 8 I worried that the Aristotelian definition of *two right angledness*, in terms of its genus and species would not make any reference to *triangle*. Nevertheless, I wanted to defend Aristotle's claim that two right angledness is a *kath' hauto* property of *triangle*. Even if the proper Aristotelian definition of *two right angledness* does not mention *triangle*, I think that there is some sense in which Aristotle thinks that what it is to be two right angled is to be a two right angled triangle. A two right-angled triangle is a compound entity consisting in the holding of the inherence relation between an instance of *two right angledness* and a particular triangle. In this way, I take it to follow from the real definition of any nonsubstantial entity that there is a substance in which it inheres.

[75]   On the definition of ontological dependence given in K. Fine (1995a), this means that the accident is ontologically dependent on the substance.

[76]   For more on this issue, see my discussion of Owen's "collapse of the categories" argument in chapter 3.

[77]   Take the case of {Socrates} and Socrates. The former is a relational entity, while the latter is not.

to essentially bear the correlativity relation to anything. However, this still leaves open the possibility that ps-entities essentially stand in other relations to things. Thus, I do not think that Aristotle's claims about relatives in *Categories* 7 constitute a general argument against taking ps-entities to be relational entities in the sense of relational entity that I currently have in mind.

I will argue that while Aristotle takes ps-entities to be nonrelational, Plato takes such things to be relational. Furthermore, I think that these claims are closely related to basic views that Plato and Aristotle hold about ontological priority. Plato holds that Forms are ontologically prior to individuals, while Aristotle holds that individuals are ontologically prior to universals.[78] I can think of no knockdown argument that either Plato or Aristotle has in favor of his own ontological theory or against that of his opponent, and any detailed discussion of their attempts at such arguments would require a separate treatment.[79] Therefore, my aim in this chapter is mainly to distinguish clearly between Aristotle and Plato using the apparatus that has been developed. Judgment about whose view is superior will have to wait.

Being a relational entity is closely tied to being an entity that is ontologically dependent on something else. Following Kit Fine, I think that ontological dependence is best cashed out in terms of essentiality. Furthermore, we should distinguish ontological dependence from modal-existential dependence in the same way that necessity is distinguished from essentiality. We have the following two conditions:

(MED) x is modal-existentially dependent on $y =_{df}$ Necessarily (if x exists then y exists).[80]

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[78]   I talk about these claims at greater length in chapter 9.

[79]   For a study of some Aristotelian objections to Plato's ontology (or at least to the ontology that Aristotle attributes to Plato), see G. Fine *On Ideas* (1995).

[80]   To even call the relation expressed in (MED) a form of dependence seems wrong. All that is really expressed here a type of covariance. Dependency in contrast, seems to require considerations of relevance that are absent from a system that contains only necessity and material implication. In chapter IX, I suggest that Aristotle has a similar insight in mind when he distinguishes mere implication of being from being a cause of being. See chapter IX for additional discussion of this issue.

(OD) x is ontologically dependent on $y =_{df}$ It follows from the real definition of x that if x exists then y exists.[81]

If x is a strongly relational entity, then there is an entity to which x essentially bears a relation. However, if there is an entity, y, to which x essentially bears a relation, then it will follow from the real definition of x that x exists only if y also exists, and x will be ontologically dependent on y. So all strongly relational entities are ontologically dependent on the things to which they are essentially related. Moreover, we will see below that weakly relational entities also exhibit a kind of generic ontological dependence, in that it follows from the essence of a weakly relational entity that if it exists some other entity of a given type exists.

Relational entities are, therefore, the sorts of things that have dependent natures. Let's say that x is a strongly relational entity, and that it is part of x's nature to bear R to the entity y. If we were going to fully analyze the nature of x, we would need to fully analyze the nature of y as well. Say that both {Socrates} and Socrates are relational entities. To be {Socrates} is to be the thing that singletons Socrates, and to be Socrates is to be a thing that has a certain soul. So to be {Socrates} is to be the thing that singletons the thing with that soul. If x is a weakly relational entity, then it belongs to the nature of x that can exist only by standing in a specific relation to some particular or other. While it is not in x's nature to be dependent on a *specific* entity, x still has a dependent nature. When something does not have a dependent nature, then we will say that the thing has a primitive nature. The primitive nature of an entity that has such a nature will consist in its i-intrinsic attributes.

The notion of ontological dependence that we have characterized in terms of essentiality can also be used to capture Aristotle's notion of one thing's being a cause of being for another. As I claimed in the last chapter, we should understand the claim that x is a cause of being for y in terms of a sort of constitution of y's existence by x's

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[81] For a discussion and defense of this notion of ontological dependence, see K. Fine (1995a).

existence. When *y* is a strongly relational entity that is ontologically dependent on *x*, what it is for *y* to exist is for *y* to bear a certain relation to *x*. But if *y's* existence just is its bearing a relation to *x*, then *x* seems to be a constituent in the very existence of *y*, and to be a cause of being for *x*.[82] The story in the case of weakly relational entities is a bit more complex, and I will discuss it when I turn to a closer examination of Aristotle's theory.[83]

Broadly speaking, there are three regions in logical space that an ontological theory might occupy. According to a given ontological theory: either all entities have primitive natures; some entities have primitive natures and others have dependent natures; or all entities have dependent natures. I take it that neither Plato nor Aristotle holds a view of the first type. Rather, each accepts that some entities that have dependent natures.[84]

In an ontology of the second type, the essences of some entities involve no relations to other entities. These entities are ontologically primitive, and are not ontologically dependent on anything else. They also have primitive natures and their being what they are does not depend on the nature of anything else. Other entities on a theory of the second type are ontologically dependent entities with dependent natures.

There are two ways that an ontological theory of the third type might go. First, it might be the case that the nature of an entity never depends on any relation to a thing whose nature depends on bearing a relation to it. In this case we will have an infinite regress of dependent natures. Notice that on this view, every entity will be

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[82]   In this way, I think that an object is a cause of being for its shadow. This shadow's existence is constituted by its bearing a relation to the object of which it is a shadow. In a similar way, a particular substance is a cause of being for the nonsubstantial particulars that inhere in it.

[83]   It is in this way that I think Aristotle can take particulars to be causes of being for universals. At any given time, a universal exists by having at least one instance exist.

[84]   A view on which all entities have primitive natures is a view on which every entity is a combinatorial atom. One such view on might be a modified relational version of Armstrong's combinatorial system, which accepts haecceities. There are individuals and universals, and these can be recombined in any way whatsoever.

ontologically dependent on something else and there will be no circles of ontological dependence. I think that such an ontology is implausible for the same reasons that I argued that some things must have in-natures in section 10.4.A.[85]

Alternatively, it might be the case that every entity has a dependent nature and is ontologically dependent on another entity, but that some cases of dependence are reciprocal. In this case, the ontology will exhibit a circular pattern of dependence. We might have a completely holistic pattern of dependence, in which the nature of every entity depends on the nature of every other entity.[86] However, the pattern of dependence need not be completely holistic. We might have one or more groups of entities, the natures of which depend on nothing other than the natures of other members of the group, and also have members outside these groups that ultimately depend on the members of these groups.[87]

I will assume that both Plato and Aristotle have theories of the second type. Some entities will be primitive, while others will be essentially relational. I take the fundamental disagreement between Plato and Aristotle to be over which entities are which. I will argue that Plato, at least on one interpretation, takes ordinary particular entities like cats and dogs to have dependent natures, while Aristotle takes such entities to have primitive natures.[88]

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[85]　　While I think that an ontology on which there is an infinite regress of relational natures is implausible, there is a case that I am worried about on which it seems to be possible for there to be an infinite regress of ontological dependence. For example, assume that mereological essentialism is true, and that there are no mereological atoms. Each sum then seems to be a strongly relational entity. If there are no other entities, then we would seem to have a counterexample to both my current claim, and the argument that I gave in section 10.4.A. For now I will bite the bullet and insist either that there can be no such world, or that sums are not distinct form their parts in the sense required by (RE).

[86]　　For reasons given in section 10.4.A, I think that this sort of ontology is implausible.

[87]　　We can create the same sort of objection to this case that we did for global ontological structuralism in 10.4.A.

[88]　　I think that Aristotle interprets Plato in something like the way that follows. However, it is beyond the scope of this project to defend this interpretation against alternatives. For a discussion of Aristotle's interpretation of Plato, and Aristotle's shortcomings as an interpreter, see Gail Fine "Separation" (1985) and *On Ideas* (1993). For an interesting alternative interpretation of Plato, see Gail Fine "Immanence" (1986), according to which Plato takes Forms to be something like scattered particulars which contain all existent immanent characters as parts, and which also contain parts other

Some interpreters of Plato, following Aristotle, assert that Plato takes Forms to be separable from sensible particulars.[89] The separability in question is supposed to imply that the Forms have a capacity for independent existence. Let's say that x has a capacity for existence independent of y if and only if it is possible that x exists and y does not exist. If x has this capacity, then x cannot be ontologically dependent on y. But if x is not ontologically dependent on y, then it cannot belong to x's essence to stand in any relation to y. The separability of Forms implies that Forms do not essentially stand in any relation to sensible things.

We could guarantee the same conclusion using a weaker notion of separability, according to which x is separable from y if and only if it is not essential to x that it bear any relation to y. Imagine, for example, that mathematical entities like numbers are necessary existents but that they are not Forms.[90] On the assumptions that mathematical entities have all of their attributes necessarily, and that a mathematical entity has an attribute by standing in a relation to a Form, it will be necessary to any Form that it stands in the relations that it does to any mathematical entity. Nevertheless, Plato will deny that it follows from the nature of the Form that it stands in these relations. As a result, the Form will be separable from the mathematical entity even though they exist in all the same possible situations. Furthermore, if the

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than those immanent characters. If this is Plato's view, then a few things follow. First, depending on the sort of whole that Forms are it may or may not be the case that Forms are primitive. Second, it does not seem that immanent characters will be ontologically dependent on Forms, in the sense of ontological dependence I have suggested. For a view of the nature of Forms in the middle dialogues that is close to what I have in mind, see M. M. McCabe's *Plato's Individuals* (1999).

[89]   For an in depth discussion of the issue of separation in Plato and Aristotle, see G. Fine (1984), (1985), Morrison (1985a), (1985b), (1985c). See also Devereaux "Separation and Immanence in Plato's Theory of Forms" (1994). I will use 'separable' rather than 'separate' to render '*choristos*'. Nevertheless, I think that separability and separateness might come to the same thing on my view. For x to be separable from y in the way that indicates ontological independence is for it to be nonessential to x that it bears any relation to y. But what is separable in this way is also separate in so far as it is a fully independent entity.

[90]   Plato has an example of the number three and the *Odd* in the *Phaedo* 103e-104c, in which, however, he seems to imply that numbers can be destroyed.

mathematical entity is has a relational nature and essentially participates in certain

Forms, then the mathematical entity will not be separable from the Form.

The separability of Forms guarantees that Forms are not ontologically

dependent on individuals. Whether Forms are ontologically dependent on other Forms

is a difficult question.[91] But it seems plausible to hold that Plato takes at least some

Forms—perhaps the Form of the *Good* is an example—to be ontologically

fundamental and to have primitive natures.[92] Since the Form of the *Good* has no

essential relations to other things, we cannot explain either the existence or the nature

of that Form in terms any relations that it stands in to anything else. If the Form of the

Good is the only primitive being, then it will be a cause for the existence and nature of

all other entities, while its own existence and nature will be completely nonrelational.

It follows that the truth of any statement about the nature of the Form of the

Good will not involve any relation that the *Good* bears to anything else, but will

involve only the *Good* itself. It might be helpful to compare this case with the

discussion of the peg-pegboard model above. While the truthmaker for 'Tom is blue'

involved a relation between **t** and **B**, the truthmaker for 'Tom is triangular,' involved

only **t** itself. Any claim about an essential attribute of the Form of the *Good* will

similarly have a nonrelational truthmaker.

Plato does not take Forms to be dependent on particulars, but takes particulars

to be ontologically dependent on Forms. There are two cases that we should examine.

First we will look at the relation between ps-entities, like Sylvester, and the Forms

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[91]   It is also a question that I will not attempt to answer here.

[92]   It is not my intention to defend this interpretation here, although some of Plato's claims about
the Good in *Republic* V incline me to accept a view like the one that I outline here. For an example of
someone who thinks differently about the Form of the Good, see T.H. Irwin *Plato's Ethics* (1995). It is
not essential to what follows that Plato takes the Form of the Good to be a nonrelational entity, but it is
essential that he takes some Forms to be nonrelational entities and I believe that he does do so. If Plato
thinks that all entities have relational natures, then I think that he faces the problem of global
ontological structuralism. For my purposes here, I attribute to Plato a view that avoids this problem, and
I use the Form of the Good as an example of a nonrelational entity.

involved in the attributes that ps-entities have essentially. Next, we will look at the relation between ps-entities and the Forms involved in their possession of non-essential attributes.

Say that Plato accepts (P-), and holds that a relational analysis is possible for every state of affairs which involves a particular entity's having some attribute. The analysis available in the case of Sylvester's being a cat might be the following: Sylvester stands in the participation relation to the Form of *Felinity*. Furthermore, say that Plato holds that Sylvester is not only necessarily feline, but is essentially feline. In other words, it follows from the real definition of Sylvester that Sylvester is a cat. It follows that Sylvester essentially stands in the relation of participation to the Form of *Felinity*. Part of what it is to be Sylvester, is to be feline, but to be feline just is to bear a relation to the Form of *Felinity*.[93] So Sylvester, on this view, is a relational entity.

Matthews and Cohen's choice to give shadows and reflections as examples of relational entities is particularly apt, given some of the metaphors that Plato uses in discussing the relationship between sensible objects and Forms. Plato sometimes draws an analogy between the relation that sensible things bear to Forms and the relation that reflections, shadows, or imitations bear to the things of which they are reflections, shadows or imitations.[94]

At *Timaeus* 29b, for example, Timaeus relates that the sensible world is an image (*eikôn*) of something stable, fixed, and transparent to the understanding. Timaeus goes on to provide an intricate theory of the way in which the visible world is

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[93]   While I am sticking with the Sylvester and *Felinity* example, I am not sure whether Plato holds that there are Forms like *Felinity* in the *Phaedo*. In the *Parmenides* (130 b-c), Socrates expresses some uncertainty about whether there is a Form for human, fire and water. I think that the basic point here could be restated in terms of a Form of *Tallness*, and the immanent characters of tallness that are in certain individuals.

[94]   There are a variety of passages that are susceptible of a variety of interpretations. Here are some: *Republic* 509-510, 532b-d, 596a, 596d-e, 597a-b, 598b, 603a-b. *Timaeus* 28-29. *Parmenides* 132-133 (where Plato seems to be criticizing the likeness analogy). *Sophist* 266ff.

modeled on something else. In *Republic X,* we are told that the artisan makes artifacts that imitate Forms. Painters and poets then imitate the products of the crafts, and thus produce imitations of imitations. The relation that a painting of a sensible bed bears to the sensible bed is analogous relation that a sensible bed bears to the Form. It is especially interesting to look at Socrates' claim at 596d-e that Glaucon would be able to make all things—the sun, all the things in the sky, himself—in a way by carrying a mirror around with him. Glaucon points out that he would only produce appearances of things and not the true beings. Socrates replies that the world of particulars stands to the Forms just as Glaucon's reflections stand to the things reflected. And at *Parmenides* 132d, Socrates suggests that participation is a matter of the sensible's being made in the image of the Form. In the following discussion, I want to take very seriously the suggestion that sensible particular things are somehow images or reflections of Forms.

What is it for one thing to be an image of another?[95] The relation of an image to thing imaged is not simply a relation of resemblance or likeness. First, resemblance is symmetrical, but the image-of relation is not. Second, for one thing to be an image of another the first has to be appropriately and non-accidentally connected to second, but mere resemblance requires no such connection. One thing will not be an image of another, if the first resembles the second as a result of pure accident. In this respect, the relation between an image and the thing of which it is an image seems to have much in common with the representation relation.[96]

Nevertheless, the image relation involves more than just representation. A word can represent an object, but we do not say that the word is an image of the

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[95]   See G. Fine (1983), pp336-337, for additional discussion of this question. Many of my thoughts on this issue are a result of trying to expand on what Fine says in her paper.
[96]   Causation is one connection most commonly thought to underlie representation. For the application of the causal theory of reference to the image relation, see Fine (1983).

object.[97] We generally think that any combination of letters could have played the role of representing any object at all. The nature of the particular word used to represent an object is, therefore, largely independent of the nature of the object represented. On the other hand, the intrinsic nature of an image is influenced by the nature of the thing represented. Had the thing imaged been different in certain crucial characteristics, the image would also have been different. For certain types of image, it is clear that we require the image to resemble the thing imaged in certain respects.[98] For one entity to be an image of another, certain relations must obtain between the intrinsic characteristics of the entities, such that had these relations failed to obtain the image relation would also have failed to obtain.

To extend an example of Gail Fine's, imagine that I am painting a picture of Ronald Reagan, and that Reagan plays a role in causing the painting to come to be. Furthermore, say that I fully intend the picture to represent Reagan. But, I am a terrible painter, and, due to my lack of control over the paints, my painting ends up looking like an undifferentiated gray blob. We might think that the painting represents Reagan, without thinking that it is an image of Reagan.[99] For a painting to count as an image of Reagan, at the very least the painting has to look the way it does because Reagan looks the way he does.[100] We can make a similar point about the relation between Forms and sensibles. For a sensible thing to be an image of a Form, the

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[97]   I am assuming that it is purely conventional what word represents what object. If various phonemes naturally represent various qualities of objects, then the word-referent relation will be more like the image-imaged relation.

[98]   There are a number of controversial issues here. I am assuming that resemblance is one type of connection between the natures of images and the natures of the things imaged. Other relations might serve equally well—for example, certain isomorphisms might underlie the image relation in the case of maps or graphs.

[99]   Imagine that I am such a bad painter, that the picture would have looked exactly the same no matter what Reagan looked like.

[100]   Whether the painting has to look like Reagan is another question. It might turn out that there are different sorts of images of Reagan, and that some must bear a visual resemblance to Reagan while others needn't do so. For something to count as a *picture of* Reagan, it might need to by visually similar to Reagan in some way.

sensible has to have the nature that it does at least in part because the Form has the nature that it does.

If one thing is an image of another, then the first must be related to the second in the way we have been examining. Gail Fine discusses an objection by John Boler, involving the distinction between its being essential to a thing's being a copy that it bear a certain relation to the thing copied, and its being essential to the thing which is a copy that it bear this relation to the thing which is copied.[101] Boler seems to think that a painting, which is in fact a portrait of Ronald Reagan, could have existed without being a portrait of Reagan. Fine disagrees, holding that things which are images are essentially images.

For our purposes here, it is not necessary to take a stand concerning images in general. [102] However, Plato clearly holds that certain sensibles are essentially images of certain Forms. To be a cat is to be an image of the Form of *Felinity*, and to be this particular cat is to be this particular image of the Form of *Felinity*. The individual cat seems to be both what it is and the way it is because it is an image of *Felinity*. On the other hand, if *Felinity* is ontologically fundamental, then there can be no further relational analysis of the nature of *Felinity*. It is simply a brute fact about the world that *Felinity* has the nature that it does. On any theory that accepts the existence of ontologically fundamental entities, facts about the nature and existence of the ontologically fundamental entities will be brute in this way.

We might wonder what is involved in a thing's being one particular image of a Form rather than another. This question seems to arise only in the case of relational

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[101]   See Fine (1983) p.336 n.23.
[102]   I tend to think that in the case of paintings, there are probably two distinct but coincident objects. One is essentially an image, and the other is physical entity which is not essentially related to the thing copied. However, I think that the relation that Plato is trying to get at between Forms and sensibles is such that a copy of a Form is essentially a copy of that Form. The real definition of a sensible thing requires that it be an image of certain Forms. Furthermore, I do not think that there will be any entity coincident with the image that is only contingently related to the Form.

entities where multiple entities all essentially stand in the same relation to a single object. In the case of {Socrates} and Socrates, there is only one entity that singletons Socrates, and the entirety of the essence of {Socrates} seems to involve only its singletoning Socrates. Anything that bears the singletoning relation to Socrates is thus identical to {Socrates}.

On the other hand, both Socrates and Callias are essentially images of the Form of *Humanity*. However, Socrates is not identical to Callias. Furthermore, it seems to be essential to Socrates that he is distinct from Callias, since it seems to follow from the nature of anything that it is not something else. The entirety of the nature of Socrates, therefore, seems to involve more than bearing the imaging relation to the Form of *Humanity*. But, if this is true, then there seems to be something that belongs to the nature of Socrates which not explainable by the fact that he stands in a relation to any Form. It might be helpful here to think again of the mirror analogy from *Republic* X. Two reflections of the sun are each essentially reflections of the sun. What makes one reflection a different reflection than another might be accounted for by the fact that one mirror is different than another mirror. While its bearing the reflection relation to the sun is responsible for the qualitative nature of each reflection, the numerical distinctness of the two reflections seems to require another explanation. If the analogy between reflections and particulars is taken seriously, we might ask what plays the role of the mirror in Plato's ontology.

Given the fact that the mirror is clearly something that has a nature independently of standing in the reflecting relation to any object, Plato's accepting (P) would already seem to require him to hold that the mirror analogy is inexact. On the mirror analogy, for a particular reflection to exist is for a mirror to stand in the reflecting relation to an entity. The reflection appears to be ontologically dependent on

both the mirror and the thing reflected. But the mirror and the object reflected seem to be ontologically independent of one another.

In the case of {Socrates} and Socrates, matters are different. It does not seem that for {Socrates} to exist is for any object other than {Socrates} to stand in a relation to Socrates. Rather for {Socrates} to exist is just for {Socrates} to stand in a relation to Socrates. If the relation between Callias and *Humanity* is like the relation between {Socrates} and Socrates on the account outlined above, then the existence of Callias is not to be explained in terms of a relation between anything other than Callias and *Humanity*. Rather for Callias to exist is for Callias to participate in *Humanity*. However, if we accept this claim, then there seems to be no explanation for the numerical distinctness of Callias from Socrates akin to the explanation for the numerical difference of one reflection from another. Accordingly, Plato might have to hold that the numerical difference between particulars is simply a brute fact.[103] It is just a brute fact that there are two participants in the Form of *Humanity*.

Aristotle raises objections, in the *Metaphysics* and *Generation and Corruption*, to Plato's claim that Forms are causes of being and becoming for particulars.[104] These objections are closely related to this question about the nature of particulars. First, let's consider the claim that Forms are causes of the coming to be of particulars. It seems that a Form cannot be the sole cause of the coming to be of a particular. Forms are

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[103]   The problem here is essentially the problem of individuation of particulars. Instead of claiming that numerical difference is brute, Plato might attempt to develop a line similar to the one developed by interpreters of Aristotle who hold that all substantial forms are universals. Plato might say that matter or some other principle of individuation is involved. Perhaps to be Socrates is to be an image of the Form in this bit of the receptacle. If Plato follows this line, he will have to explain how matter can serve as a principle of individuation without having an essential nature of its own. While I cannot give this issue the thorough treatment that it deserves in here, I have two hunches. First, I suspect that Aristotle does not accept this sort of view about the individuation of particulars. Second, I suspect that we might develop an argument in favor of Aristotle's ontology and against Plato's from considerations about what makes something the particular thing that it is.

[104]   In both *De Generatione et Corruptione* II.9 (335b7-23) and *Metaphysics* A.9 (991b3-9), Aristotle explicitly refers to Plato's theory in the *Phaedo*. The text at *Metaphysics* A.9 is repeated at M.5 (1080a2-8). For discussion of these passages, see Annas (1982) and especially G. Fine's "Forms as Causes" (1987).

eternally stable, but particulars come into existence at one time rather than another. If there is to be a sufficient account for why this particular comes into existence at this time, the this condition must involve more than simply the fact that a certain Form exists and has the nature that it does. Second, let's consider the claim that a given Form is a cause of being for a given particular. For a Form to be a sufficient cause of being for this particular would seem to require that the particular's being the particular thing that it is is completely accounted for by the nature of the Form. However, this would seem to require that we account for the fact that *this* particular rather than another on exists in terms of facts about the nature of the Form. I am not certain how Plato should respond to these worries, and there are many tricky issues involved.[105]

I turn to Plato's account of the relation between sensible particulars and the attributes that they have non-essentially. Many things are true of Sylvester in addition to his being a cat. For example, he is both black and persistent. However, these attributes do not even seem necessary to Sylvester, let alone essential. It seems incorrect, therefore, to say that Sylvester is an image of *Blackness* and *Persistentness* in the same way that he is an image of *Felinity*. We cannot hold both that for Sylvester to have any attribute is for him to participate in the appropriate Form, and that participation in a Form is the same as being essentially an image of that Form. So what sorts of truthmaker will Plato offer for the claim that Sylvester is persistent?

Plato suggests an answer to this problem in the *Phaedo* at 102a10-103a2. Socrates has just gotten his interlocutors to agree that there are various Forms, and that other things are called by the names of the Forms because they participate (*metalambanein*) in the Forms. Socrates then points out that we truly say of Simmias both that he is taller than Socrates and that he is shorter than Phaedo. We are committed to claiming that both tallness and shortness are in Simmias. One and the

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[105]   For more on the issue of Forms as causes, see Annas (1982), and Fine (1987).

same thing appears to have contrary attributes, and this seems to be a problem. One way to remove the problem would be to point out that Simmias is said to have seemingly incompatible properties *in relation* to different things. Properties that seem to be incompatible *prima facie* needn't be incompatible once we see that a subject has each in relation to a different thing. Plato, however, does not follow this strategy to remove the problem.

Instead the character of Socrates gets his interlocutor in the dialogue to agree that the statement 'Simmias is taller than Socrates,' is not true stated in those words.[106] What Plato means here is not that the statement is false, but that the statement does not clearly reveal the underlying structure of its truthmaker. Plato goes on to reveal more clearly the underlying structure of the truthmaker for the claim. He tells us that it is not due to his being Simmias that Simmias is taller than Socrates, but because of the tallness that Simmias happens to have. Similarly, Simmias is not taller than Socrates because Socrates is Socrates, but because Socrates has shortness.[107] Socrates tells us that, strictly speaking, it is the tallness in Simmias that is larger than the smallness in Socrates.[108]

Furthermore, Plato tells us that neither the Form of *Tallness*, nor the tallness in Simmias, is short in any way. Entities like the tallness in us are sometimes called "immanent characters", and Plato distinguishes such entities from Forms, and from the entities in which they are said to be.[109] Furthermore, it seems that immanent characters

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[106]   At 102b8-9 Socrates asks "Do you agree that the claim 'Simmias is taller than Socrates,' as said with these words is not even true?" ("ὁμολογεῖς τὸ τὸν Σιμμίαν ὑπερέχειν Σωκράτους οὐχ ὡς τοῖς ῥήμασι λέγεται οὕτω καὶ τὸ ἀληθὲς ἔχειν;")

[107]   See *Phaedo* 102c1-d4.

[108]   This is how I take Plato's claim that "Simmias is called both short and tall, being between the two, presenting his shortness to be overcome by the tallness of the one, and his tallness to overcome the shortness of the other." (102c10-d4, translation Grube)

[109]   *Phaedo* 102d5-103a2. Plato distinguishes 'the tallness itself' ('*auto to megethos*') which I take to refer to the Form of *Tallness*, from 'the tallness in us' ('*to en hêmin megethos*') which I take to refer to an immanent character. Immanent characters are particulars that belong to a single particular, and there can be multiple numerically distinct immanent characters of the same sort in different individuals. Plato's claim that immanent characters are 'in' things calls to mind Aristotle's inherence talk in the

are strictly speaking the things that are called after and participate in the relevant Forms. Whenever an entity seemingly has conflicting attributes, we will be able to analyze the situation in terms of there being two immanent characters of conflicting Forms in that entity. Furthermore, neither of these immanent characters is itself a thing that has conflicting attributes.

We are now in a position to give an analysis of the truthmaker for the claim 'Sylvester is persistent'. There is an immanent character of the Form of *Persistentness* in Sylvester, which essentially participates in the Form of *Persistentness*. This immanent character is a strongly relational entity, since it is essential to it to be an image of the Form. Sylvester essentially stands in a relation neither to this immanent character of persistentness, nor to the Form of *Persistentness*. It seems that the relation between *Persistentness* and its immanent characters is the same participation relation that holds between *Felinity* and Sylvester, and that we might, therefore, count Sylvester as an immanent character of the Form of *Felinity*.[110]

On the picture of Plato's ontology I have given, there are two basic sorts of entities: Forms and immanent characters. I have argued that Plato takes immanent characters to be strongly relational entities, and that immanent characters essentially participate in Forms. Plato, therefore, denies (R_E*). Plato's denying (R_E*) is, however, entirely natural given the fact that he takes Forms to be ontologically prior to

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Categories. Furthermore, on the interpretation that I favor, Aristotle's ontology is like Plato's in that both accept qualitative particulars in addition to qualitative universals or Forms.

[110] I have been unable to find any evidence to settle the question of whether Plato thinks that it is essential to the immanent character of *persistentness* in Sylvester that it is in Sylvester. However, were Plato to think that is essential for the immanent character to be in the object that it is in, the relation between immanent characters and ps-entities would be very similar to the relation that Aristotle takes to hold between nonsubstantial particulars and primary substances. I have also been unable to determine whether Plato wants to divide Forms into substance Forms and accident Forms. In the *Phaedo*, Plato distinguishes fire and snow from heat and cold. He also distinguishes the number three from the oddness that belongs to three, and the immanent character of aliveness in the soul from the soul. Whether Plato thinks that the soul is a subject for aliveness in the way that Aristotle thinks that a primary substance is a subject for a nonsubstantial particular, however, is not clear. In the *Parmenides*, Socrates expresses some uncertainty about whether there is a Form for human being, fire and water (130c1-2).

individuals. We still have to see whether Aristotle is also committed to holding that ps-entities like Sylvester are relational entities.

In section 10.3, I outlined a parity of reasoning argument that we could run against Aristotle to show that he is just as strongly committed to the claim that Sylvester is a relational entity as Plato is. I do not think that Aristotle holds that there is any possible situation in which Sylvester exists, but in which the species *cat* is not said-of Sylvester. [111] So, Aristotle takes it to be necessary to Sylvester that the species *cat* is said-of him. On the definition of strongly relational entity given in (RE$_{FS}$), then, Sylvester counts as a strongly relational entity for both Aristotle and Plato. However, I think that Aristotle can deny that Sylvester is a strongly relational entity in the sense given (RE$_{ES}$). While he will accept that it is necessary to Sylvester that *cat* be said-of him, Aristotle will deny that it is essential to Sylvester that *cat* be said-of him. Furthermore, this denial is strongly connected with Aristotle's taking things like Sylvester to be ontologically basic entities.

The claim that it is not essential to Sylvester that *cat* is said-of him initially appears to be problematic. Aristotle clearly thinks that Sylvester is a cat essentially. If anything belongs to Sylvester's nature, then his being a cat does. Earlier in this work, I considered the claim that Aristotle takes the inherence and said-of relations to be fundamental relations by which entities are combined to yield truthmakers for our claims about the world, and in terms of which predication is to be analyzed. According

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[111] In this respect, my view differs from that of Terence Irwin, who thinks that it is not necessary to Socrates that the universal *human* be said-of him. Irwin argues that Aristotle requires a universal to be predicated of a plurality of individuals for it to exist. (See Irwin's *Aristotle's First Principles* (1988), pp.40-43.) A nice feature of Irwin's view is that does not require that *human* be prior in implication of existence to a particular human being. Socrates could exist in the absence of all other human beings. In such a case, Socrates would exist but the universal *human* would fail to exist and fail to be said-of Socrates. Therefore, it would be possible for Socrates to exist without having the universal *human* said-of him. If having *human* said-of him is not necessary to Socrates, then it cannot be essential to him either. If Irwin is right about the nature of universals, it follows that Socrates' nature is not dependent on that of the universal *human*. I discuss my reasons for rejecting Irwin's actual plural instantiation requirement view in chapter 7.

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to the interpretation that I was considering, when we utter a sentence like 'Sylvester is black,' we predicate an accident of Sylvester. I will call such sentences instances of accidental predication.[112] Instances of accidental predication are made true by the holding of the inherence relation between a non-substance and a substance. In the case of our example, the sentence is made true by the inherence of a nonsubstantial particular blackness in the particular substance Sylvester.

On the other hand, we use a sentence like 'Sylvester is a cat' to predicate something essential of Sylvester, to reveal what Sylvester is rather than the attributes that Sylvester happens to have.[113] I will call such sentences instances of essential predication. I assume that whenever an instance of essential predication of the form $\ulcorner \alpha$ is (a) $\Phi \urcorner$ is true, a sentence of the form $\ulcorner$ It is essential to α that α is (a) $\Phi \urcorner$ is also true in the sense given by (DE3). In other words, the truth of the proposition follows from the nature of the subject α. Whenever there is a true case of essential predication, the said-of relation holds between an entity and the species, genus or differentia of that entity. It is natural to go further, and claim that instances of essential predication are made true by the holding of the said-of relation between a species, genus or differentia of an entity and that entity. In the case of our example, the further claim would be that the sentence is made true by the fact that *cat* is said-of Sylvester.

According to this story, the underlying truthmakers for both essential and accidental predication involve the holding of a fundamental relation between two

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[112]   According to Aristotle, it needn't be the case that instances of accidental predication are contingent. Aristotle thinks that some of the necessary attributes of a thing are not part of that thing's real definition, for example it is a necessary property of triangles that they have interior angles equal to two right angles. However, it is not essential to triangles that they have two right angles. Therefore, 'Having two right angles belongs to triangle,' involves accidental predication. These sorts of cases provide some evidence that necessity and essentiality come apart for Aristotle.

[113]   The distinction here is a familiar one. Paul Grice invented the terms 'IZZ' and 'HAZZ' to distinguish essential from accidental predication. See Grice (1988) "Aristotle on the Multiplicity of Being." See also, Alan Code's (1983) "Aristotle: Essence and Accident," See also S. M. Cohen's website, which summarizes and explains both articles: http://faculty.washington.edu/smcohen/433/GriceCode.pdf.

entities. We can call such truthmakers relational truthmakers. I will assume that the truthmakers for accidental predication are relational, and that the analysis in terms of inherence given above is basically correct. We can confine our attention then to instances of essential predication.

Aristotle's holding both (i) that there are true instances of essential predication with primary substances as subjects, and (ii) that all instances of essential predication have relational truth makers, commits him to the claim (iii) that primary substances are strongly relational entities. I have argued that strongly relational entities cannot be ontologically prior to the things to which they are essentially related. However, as we saw in chapter 9, Aristotle wants primary substances to be ontologically prior to their species and genera.

Something has to give. I take the ontological priority of primary substances to be non-negotiable for Aristotle. I also see no way to coherently deny that Aristotle takes there to be true instances of essential predication about primary substances. The only alternative open to Aristotle seems to be for him to deny that true instances of essential predication have relational truthmakers.[114]

On the resulting view, Aristotle will hold that 'Socrates is human' is an instance of essential predication, and he will hold that *human* is said-of Socrates in every world in which Socrates exists. However, he will deny that for Socrates to be human is for *human* to be said-of Socrates. To put the same point in the formal mode, Aristotle holds that as a matter of necessity the sentence, 'Socrates is human,' is true if and only if *human* is said-of Socrates. However, he denies that 'Socrates is human,' is true **because** *human* is said-of Socrates, or in virtue of the fact that *human* is said-of

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[114] It is important to keep in mind as this point that 'essential predication' is not being used to name a relation between entities. I am saying that certain true sentences are instances of essential predication, and then claiming that the underlying truthmaker for these sentences does not involve any relation between entities.

Socrates.[115] Rather, as I will argue in a moment, Aristotle takes the order of explanation to go in the other direction. *Human* is said-of Socrates because Socrates has the nonrelational nature that he does.

First, however, I want to say a bit more about what the truthmakers for instances of essential predication look like on this interpretation of Aristotle. The only entity that will be involved in the truthmaker for 'Socrates is human,' is Socrates himself.[116] In the pegboard example in section 10.4.C, we saw that two sentences could be syntactically alike even in cases where the truthmakers for those sentences were quite different. For example, 'Tom is blue,' and 'Tom is triangular,' have the same grammatical form. The first sentence is made true in our model by **t**'s standing in the insertion relation to B. The truthmaker for the second sentence involves no entity in our model other than **t** itself. The peg **t** in our original model was combinatorially separable from every other entity in that model. In addition, we saw that **t** had a nature independently of any of the combinatorial relations that it entered into with any other entity in our model, and this nature was stable across all possible

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[115]   On the view that I have been arguing for throughout this work, the said-of relation is a relation that holds between universals and parts of these universals. *Human* has Socrates as a part. However, there is some way that Socrates is independently of his being a part of the universal. It does seem somewhat odd to think that the entire nature of a part is to be accounted for by the fact that it is part of a whole. However, take away the fact that Socrates is a part of *human* and ask whether there is anything essential to Socrates. It seems to me that we should still say that he in human. His being human, in that case, is not accounted for by the fact that *human* is said-of him. His being human is not accounted for by any relation to any other entity. Nevertheless, I do not deny that Aristotle does accept that there are universals. These universals are wholes which bear the said-of relation to the appropriate particulars. The fact that a universal bears the said-of relation to a particular is not analyzed in terms of any further relations between entities. Therefore, the said-of relation counts as a fundamental relation.
[116]   In fact, I do not think that the pronoun 'himself' is entirely appropriate in this case. Socrates' being male seems to involve a relation that Socrates stands in to an entity other than himself. If the account that I am suggesting is correct, then every member of an *infimae species* will turn out to be perfectly similar to every other member of that species. I think that Aristotle and Plato are similar on this score. On Plato's account, the nature of any immanent character is exhausted by its being an image of the Form of which it is an image. Any non-numerical differences between two individuals that are subjects of the same essential predicates will have to be explained in terms of things that they are related to accidentally, where some accidents are nevertheless necessary.

combinations of **t** with other things. Furthermore, **t**'s being triangular in any model was guaranteed by the very identity of **t**.

I think that Aristotle has a similar account of the truthmakers for instances of essential predication. While the truthmaker for 'Socrates is brave,' involves a relation between Socrates and an instance of bravery, the truthmaker for 'Socrates is human,' involves nothing other than Socrates. Socrates is not a relational entity, and is a thing that has a determinate nature apart from any relation he stands in to anything else. Moreover, it is the nonrelational nature of Socrates which accounts for the truth of the claim that he is human. The truth of any true instance of essential predication will be grounded in the identity of the subject of that instance of predication. The claim that Socrates is human is grounded in the nature of Socrates and the claim that Callias is human is grounded in the nature of Callias. Primary substances will also be brute individuals on this interpretation of Aristotle. The explanation for the numerical diversity of two distinct human beings, like Socrates and Callias, follows directly from the identities each of them.[117] In these ways, primary substances are nonrelational entities.

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[117]   In saying that the individuation of a primary substance is primitive, I mean that we do not need to give any analysis in terms of other things of what it is for this thing, rather than a numerically distinct thing, to exist in a possible situation. For example, what it is to be Socrates rather than Callias is not to be explained in terms of any relations that each of them bears to any other more primitive entities. Furthermore, I take Aristotle to be a haecceitist in the sense that two worlds could be indiscernible yet differ with respect to which objects were in the world. Nevertheless, I think that Aristotle only need be a haecceitist about primary substances, since the individuation of all other particulars will be derivative on the individuation of primary substances. For more about haecceities, see Lewis *On the Plurality of Worlds* (1986), Kripke *naming and Necessity* (1980), Bob Adams "Primitive Thisness and Primitive Identity" (1979).

Imagine that we have two human beings, Dion and Theon. On my view, Aristotle takes all human beings, considered just with respect to their essences, to be indiscernible from one another. Nevertheless, there will be primitive differences between a world containing only Dion and a world containing only Theon. Now imagine that Dion and Theon are also indiscernible with respect to all their accidents, and consider a world containing only Dion and a world containing only Theon. The fact that a particular pallor in one world is numerically distinct from a particular pallor in another world will be accounted for by the fact that one inheres in Dion, while the other inheres in Theon.

Aristotle takes primary substances to be nonrelational entities. But what about the other sorts of entities in Aristotle's four-fold division of the things that are: substantial universals, nonsubstantial particulars, and nonsubstantial universals? We will look briefly at each sort of entity in turn.

Aristotle takes substantial universals to be weakly relational entities. As we saw in the last chapter, a species like *human* is prior in implication to an individual like Socrates. For any individual member of a given species, it is possible for the species to exist without that individual, but it is not possible for the individual to exist without the species. However, as I argued in the last chapter, the existence of an individual seems to imply the existence of a species in the way in which a sufficient cause implies the existence of its effect, rather than in the way in which the existence of an effect implies the existence of a necessary precondition for that effect. Aristotle takes the individual to be a cause of being for the universal. Aristotle's view differs from that of Plato, for whom the Form is a cause of being for each of its participants. On Aristotle's view, no universal can exist without having at least one instance. So, it is necessary to the existence of any universal that it stands in the said-of relation to at least one appropriate particular. Any substance universal would, therefore, seem to count as a weakly relational entity according to (RE_{FW}) above.

However, to count as a weakly relational entity according to (RE_{EW}) it must be essential to the substance universal that there be at least one entity it is said-of. Accordingly, we have to ask whether it follows from the very nature of a secondary substance that it be said-of at least one appropriate particular. I think we should answer this question in the affirmative. On the view of Aristotelian universals I outlined in chapter 7, substance universals are compositionally plastic wholes which contain the particulars they are said-of as parts. But, while universals are compositionally plastic, there are limits to the sorts of parts that can constitute them.

For example, *human* contains all and only the particular humans as parts. I take these limitations on the possible constitution of a universal to follow from the nature of that universal. What it is to be the universal *human* is to be the thing said-of all and only the human beings; equivalently it is to be the thing that is entirely constituted in any possible situation by the particular human beings that exist in that situation.[118] It follows, therefore, from the nature of *human* that it stands in the said-of relation to at least one particular human being. If this reasoning is correct, then Aristotle will take substantial universals to be weakly relational entities even in the stronger sense given in (RE$_{EW}$).[119]

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[118] If we claim both that to be the universal *human* is to be the things that it is said of all the particular humans, and that for a particular to be human is to have the universal *human* said-of it, our account will look circular. I think that we can avoid this circularity by claiming that each of the individual humans are human, not because the universal is said-of them, but because of its nonrelational nature. In addition, I think that Aristotle should claim that each individual human is indistinguishable from every other human being, when we take all of them without their various accidents. We can then specify the species universal *human* as the thing that is said-of all the particulars perfectly resembling any particular human that we care to indicate. This procedure bears some resemblance to one used by trope-theorists to define perfect similarity classes of tropes. It is somewhat trickier to use this sort of procedure to specify more general universals in which there is not perfect resemblance among all the particulars. For example, it will be harder to specify genera. See Armstrong (1989) for further discussion of the merits of this proposal.

Like the trope theorist, or any other theorist who takes particulars to be prior to universals, Aristotle is going to lose the ability to *explain* the resemblance of two members of the same species in terms of the fact that they bear a fundamental relation to a single universal. If this is a serious cost, then Plato's theory has an advantage. However, the advantage might be short-lived, if we want to make resemblance claims about two or more entities that Plato holds to be fundamental. For example, what accounts for the fact that two color Forms resemble each other insofar as they are both color Forms? The only way to avoid the problem entirely would be (i) to avoid the need to refuse to make any resemblance claims at all concerning two or more fundamental entities, a step which seems difficult to accept; or (ii) to deny that there are two or more fundamental entities, which also seems difficult to accept.

[119] As I mentioned previously in this chapter, it is hard to give a gloss of weak relationality in combinatorial terms. Here is the best I can do. Although, we can indicate *human* as an entity for recombination independently of its bearing the said-of relation to any of the particular humans in the world, it follows from the nature of *human* both that we cannot include it in any model in which it is not said-of at least one human and that *human* cannot fail to exist in any world where at least one human being exists. Strictly speaking, *human* is a weakly relational entity because of the truth of the first conjunct. By way of analogy, imagine that human beings are essentially physical entities composed of atoms. While a human being might be specified for recombination independently of its having any particular atom as a part, I cannot include that human being in a world in which it has no atoms as parts. Human beings, on this view, turn out to be weakly relational entities.

The fact that substantial universals are weakly relational entities is importantly connected to the fact that primary substances count as causes of being for secondary substances. For example, the nature of *human* requires both that it stand in the said-of relation to at least one individual human in any situation in which it exists, and that it is said-of every individual human in any possible situation in which it exists. Say that *human* is said-of exactly three entities in a given situation. The fact that *human* can exist without each of these entities shows that the nature of *human* is not wholly exhausted by the fact that it is said-of these very entities. Nevertheless, in this particular situation *human* satisfies the requirements of its nature by being said-of these particular humans. Similarly, while *human* could have had another cause of its being, in this situation these humans are the actual causes of its being.[120] As I argue in chapter 9, it is in this way that Aristotle is justified in taking the individual humans to be ontologically prior to the species universal *human.*

Nonsubstantial particulars have a nature that is independent of their being things that nonsubstantial universals are said-of. In addition, instances of essential predication with nonsubstantial particulars as subjects will have nonrelational truthmakers. 'This particular pallor is pale,' for example, will be made true simply by the nature of the nonsubstantial particular. Nevertheless, nonsubstantial particulars will be strongly relational entities on Aristotle's account, since it is essential to them to inhere in the substances in which they inhere. In this way, a nonsubstantial particular

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[120]   The relation between *human* and the particular totality of humans that composes it in any situation strikes me as having a lot in common with the relation of realization. See chapter 7 for more discussion of the application of realization talk to the relation between universals and their instances. For further discussion of the nature of various types of realization, see Sydney Shoemaker's *Physical Realization* (2007). I take the constitution of an entity by other entities to be a sort of realization, or at least to belong to the same general family of relations as realization. In the case discussed here, it is important to point out that each individual human being on its own could have causally sufficed for human, and in this way *human* seems overdetermined. I discuss this sort of overdetermination further in chapter 9.

will be similar to {Socrates}, in that a nonsubstantial particular is not combinatorially separable from the primary substance in which it inheres.

To specify a particular pallor as a subject for recombination, I must specify it as a thing inherent in this particular primary substance. A nonsubstantial particular's being the individual that it is requires that in inhere in the primary substance that it inheres in. Nonsubstantial particulars are ontologically dependent on primary substances. Primary substances count as causes of the being of nonsubstantial particulars by being entities on which nonsubstantial particulars are ontologically dependent. Nevertheless, the nature of a nonsubstantial particular is not purely relational. The instance of pallor in Socrates is not the same in its essence as the instance of snub-nosedness in Socrates, although both entities are essentially inherent in Socrates. While it follows from the essence of an instance of pallor that it inheres in Socrates, the essence is not exhausted by the thing's being inherent in Socrates. In this way, the instance of pallor differs from {Socrates}, the entire nature of which seems to be exhausted by its singletoning Socrates.[121]

Finally, nonsubstantial universals appear to be doubly relational. They stand to nonsubstantial particulars as substantial universals stand to primary substances. What it is to be the universal *pallor* is to be the thing that is said-of every nonsubstantial particular pallor. In addition nonsubstantial universals seem to be strongly relational entities since it is part of their essence to inhere in substantial universals. For example, *color* essentially stands in the inherence relation to *body*. It follows from the essence of a nonsubstantial universal that its existence requires both the existence of the

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[121]　We can distinguish the nonsubstantial particular's being the way it is—its having a nature that is like or unlike that of other nonsubstantial particulars—from its being this particular entity. The suchness of a nonsubstantial particular is accounted for nonrelationally. However, to the extent that it is a particular, its being the particular that it is depends on its inherence in this particular substance. On problem concerns different nonsubstantial particulars of the same sort possessed by a single substance at different times. What differentiates the sunburn that I have now from the perfectly similar sunburn that I had last year?

particular secondary substance in which it inheres, and the existence of some appropriate nonsubstantial particular. However, it follows from the nature of any nonsubstantial particular that it can exist only if the subject in which it inheres exists. So it follows from the nature of a nonsubstantial universal that it exists only in those worlds where some appropriate primary substance also exists.

Every nonsubstantial universal has the nonsubstantial particulars which constitute it as causes of its being. These nonsubstantial particulars, in turn, have the primary substances in which they inhere as causes of being. On the assumption that being a cause of being for a thing is transitive, certain primary substances are the ultimate causes of being for any nonsubstantial universal whenever it exists.[122]

On Aristotle's account, whenever anything other than a primary substance exists, it has primary substances as causes of its being. While a primary substance has the nature that it does primitively, every other entity is essentially relational. Furthermore, while instances of accidental predication are susceptible of relational analysis on Aristotle's account, true instances of essential predication will have nonrelational truthmakers.

The idea of a nonrelational truthmaker might seem somewhat strange at first glance. The instances of essential predication that we have looked at seem like they are susceptible of relational analysis, and to deny that this is so has a cost. However, I think that this is a cost that any ontology will have to bear, if it allows us to say anything about the natures of fundamental entities. I have argued that we can explain why anything has the nature that it does, only if we allow that the natures of some entities are not accounted for relationally. The account that Aristotle gives of Socrates' being human will be similar to the account that Plato will have to give for true claims

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[122]   This assumption strikes me as reasonable, but I am not totally certain that it is true. If one thing is a ground for the being of another, which is in turn a ground of being for a third, then the first would seem to be a ground of being for the third.

about the nature of at least some of the Forms. Any ontological theory according to which some entities are ontologically primitive but still differ in nature from each other will need to tell a similar story about how to account for true and essential claims about its ontologically primitive entities.

So Plato and Aristotle do not seem to be alone in having to give such an account. An ontological theory would require no nonrelational truthmakers only if that theory held that every entity had a purely relational essence. However, I have argued that no view on which every entity has a purely relational essence can make sense out of the claim that anything's nature differs from anything else's nature.

In this chapter, I have offered an account of what it is to be a relational entity on which Plato does, but Aristotle does not, take particular entities like Sylvester the cat to be relational entities. I have also sketched two very different ontological theories. In the course of doing so I hope to have highlighted some of the considerations that must be brought to bear in choosing between these theories. However, I still do not find myself in a position to choose between these theories.

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