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Francis Jeffry Pelletier

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# *Sameness and Referential Opacity*

## *In Aristotle*

FRANCIS JEFFRY PELLETIER

UNIVERSITY OF ALBERTA

It is well-known that Aristotle wrote a lot about sameness. It is also widely believed that the concept of sameness in Aristotle underwent drastic revision—from being more-or-less like the modern notion of identity to being something we would not wish to call ‘identity’ at all.<sup>1</sup> In the *Topics*, an early work, we find hints of something we would recognize (although Aristotle is still claimed to have a “weak grip” on the concept); in *Metaphysics* V (late) we can find only a series of pronouncements according to which it would seem that Aristotle must mean something like ‘are parts of a unitary whole’ when he says ‘are the same’.

In this paper I wish to challenge this popular view of Aristotle. I will do it by looking at Aristotle’s semantical and ontological claims concerning sameness and related notions throughout the course of his writings. I shall start by taking a look at the statements made in the *Topics*; and I will claim that the pronouncements made there about ‘same’—*τὰντόν*—are much closer to what we mean by ‘identity’ than the popular view allows. I will then look at a sample of Aristotle’s reasoning in *Meta.* VII 6 which uses ‘same’. I shall show that this ‘same’ cannot be adequately understood as our ‘identity’ by investigating Ross’ account of Aristotle’s reasoning (in which it is rendered by ‘=’). We shall then embark on an excursion through some interesting features of Aristotle’s technical locutions, and try to give an account of his use of ‘sameness’ in *Meta.* V. This relation, it will be seen, is not ours of ‘=’, nor the earlier *Topics* one; but it does afford us a way to account for Aristotle’s reasoning in *Meta.* VII 6.<sup>2</sup> We conclude, therefore, that the ideas in *Meta.* VII—of sameness, anyway—do not differ importantly from those in *Meta.* V.

## I

The modern notion, henceforth called ‘identity’ and sometimes rendered by ‘=’, is well-understood. It can be a primitive addition to a first-order theory by axioms, axiom schemata (particularly “Leibniz’s Law”), or by means of a second-order definition.<sup>3</sup> The semantical underpinnings (what the truth conditions for sentences containing ‘=’ are) are given by clauses defining our valuation function  $V$  like this:

$$\begin{aligned} V[x = y] \text{ is } 1 & \text{ iff } I[x] = I[y] \\ & \text{ is } 0 \text{ otherwise} \end{aligned}$$

where  $I$  is an “interpretation function” stating *inter alia* which entity in the domain ‘ $x$ ’ and ‘ $y$ ’ denote. A quick statement of this valuation clause would be something like: “‘ $x = y$ ’ is true (according to  $I$ ) if and only if ‘ $x$ ’ and ‘ $y$ ’ name the identical thing (according to  $I$ ).”

Of course, these are the *semantical* underpinnings of the theory; the displayed definition does not really clarify the role of identity, it rather presupposes the issue. The second occurrence of ‘=’ is the crucial one, and that is not defined here. However, we know enough of the properties of ‘=’ to be able to evaluate whether some proposed relation is our identity or not.

Did Aristotle ever have such a notion? The popular view says no, and I disagree. Let’s look at some of Aristotle’s pronouncements in the *Topics*. At 151b29 we are told that the strictest sense of ‘same’ is what he (and I from now on) will call ‘numerical sameness’; and at 152a31-b35 are given various “commonplaces” (to use his terminology at 152b36)—i.e., some crucial features of numerical sameness, which we can put like this (not, I hope, anachronistically):

- (a) For all  $x, y$ , and  $z$ , if  $x$  is numerically the same as  $z$  and  $y$  is not numerically the same as  $z$ , then  $x$  is not numerically the same as  $y$ .
- (b) For all  $x$  and  $y$ , if  $x$  is numerically the same as  $y$ , then every accident of  $x$  must be an accident of  $y$ .<sup>4</sup>
- (c) For all  $x$  and  $y$ , if  $x$  is numerically the same as  $y$ , then for any  $z$  such that  $x$  is an accident of  $z$ ,  $y$  is an accident of  $z$ .<sup>5</sup>

- (d) For any  $x$  and  $y$ , if  $x$  is numerically the same as  $y$ , then if  $\Phi$  is predicated of  $x$ ,  $\Phi$  is predicated of  $y$ .<sup>6</sup>
- (e) For any  $x$  and  $y$ , if  $x$  is numerically the same as  $y$ , then for any  $z$  such that  $x$  is predicated of  $z$ ,  $y$  is predicated of  $z$ .<sup>7</sup>

Aristotle's earlier discussion in *Topics* I 7 is given over to "defining" 'sameness.' Of numerical sameness he says there are three kinds. Accidental cases of numerical sameness are characterized by the use of a per accidens predicate which is said to be co-extensive with another predicate. A second kind of numerical sameness is one in which one of the terms indicates a necessary but non-essential property (*ἰδιον*), e.g., 'thing capable of receiving knowledge' and 'man'. Finally, one kind of numerical sameness involves a description that functions as a definition and thereby indicates an essence. Now, it must be admitted that this kind of characterization is peculiar indeed. For, instead of talking about the object, we are given a characterization of the kinds of ways in which the terms can indicate the object. It seems that Aristotle feels that numerical sameness is not a monolithic relation, but rather one whose (conceptual) parts can be differently explained. On the other hand, it should be noted that each of the three cases of true numerical sameness involves terms which bear the same *semantic relation* to the world: the terms name or denote exactly one and the same object. Aristotle says that this is what sets apart any case of numerical sameness from other kinds of sameness (viz., specific or generic sameness): only in the former case is there "more than one name for the same thing" (103a10). This doctrine of numerical sameness, strangely as it is presented, is therefore quite close in its consequences to those of '='. For one thing, ignoring problems arising from Aristotle's apparent intent of understanding the indefinite article to be permitted, a sentence of the form ' $\alpha$  is numerically the same as  $\beta$ ' is true only if ' $\alpha = \beta$ ' is true, because of the primacy given to the semantic relation of naming the same object in the *Topics*.<sup>8</sup> Numerical sameness is therefore a relation between *objects* (or: with an object and itself). It is the primacy accorded to this semantic relation (and the consequences attending thereupon) which justifies us in saying that there is one relation here—that 'is numerically the same as' has one (disjunctive) sense—rather than three relations (or three separate senses to 'is numerically the same as'.

The *Topics* doctrine can, I think, be expressed like this.

(N.S.)  $x$  is numerically the same as  $y$  iff

- (a) there is some expression 'this  $\alpha$ ' which denotes  $x$  and some expression 'this  $\beta$ ' which denotes  $y$  such that both (1) either  $\alpha$  is the definition of  $\beta$  or  $\beta$  is the definition of  $\alpha$ , and (2) 'this  $\alpha$ ' denotes  $y$  and 'this  $\beta$ ' denotes  $x$ ,
- or (b) there is some expression 'this  $\alpha$ ' which denotes  $x$  and some expression 'this  $\beta$ ' which denotes  $y$  such that both (1)  $\alpha$  and  $\beta$  are *ιδιων* properties of each other, and (2) 'this  $\alpha$ ' denotes  $y$  and 'this  $\beta$ ' denotes  $x$ ,
- or (c) there is some expression 'this  $\alpha$ ' which denotes  $x$  and some expression 'this  $\beta$ ' which denotes  $y$  such that both (1) either  $\alpha$  is an accident of  $x$  or  $\beta$  is an accident of  $y$ , and (2) 'this  $\alpha$ ' denotes  $y$  and 'this  $\beta$ ' denotes  $x$ .

Some things might be noted about this definition of numerical sameness. First, the (2)-clause in each disjunct is what makes this sameness be *numerical* sameness and not some other kind. Second, given our view that both 'Φ and Ψ denote  $x$ ' and 'Φ denotes  $y$ ' are true only if 'Ψ denotes  $y$ ' is true, then the (2)-clause could all be simplified to " 'this  $\alpha$ ' denotes  $y$ ". I chose not to do that here because it is unclear just what the effect of allowing indefinite terms will turn out to be. Thus, since the intended interpretation of the (2)-clauses is to guarantee that it is the identical object we are picking out, they could each be replaced by (our locution) ' $x = y$ '. Fourth, the positions occupied by ' $x$ ' and ' $y$ ' are purely referential in this definition. And fifth, there are various other, equivalent, ways to state the definition. One such way is (making use of the above comments):

(N.S.\*)  $x$  is numerically the same as  $y$  iff

- 1. There is some expression 'this  $\alpha$ ' which denotes  $x$  and some expression 'this  $\beta$ ' which denotes  $y$
- and 2.  $x = y$

- and 3.      a) either  $\alpha$  is the definition of  $\beta$  or  
                                           $\beta$  is the definition of  $\alpha$   
                  or b)  $\alpha$  and  $\beta$  are *ἴδιον* properties of  
                                          each other  
                  or c) either  $\alpha$  is an accident of  $x$  or  $\beta$  is  
                                          an accident of  $y$ .

Given a language (such as English or Greek) which has sufficient resources to be able to formulate, for any object, an accidental expression, an *ἴδιον* expression, or a definitory expression which denotes that object, it would follow that everything is numerically the same as itself (and numerically not the same as everything else) in each of the three sub-kinds of numerical sameness (since there would always be terms  $\alpha$  and  $\beta$  which will satisfy any of the three clauses). That is to say, given only that we have a sufficiently rich language, Aristotle's numerical sameness and our identity are indistinguishable relations. (And then given the identity of indiscernibles. . .)

## II

Aristotle changed his mind, of that there can be no doubt. In *De Soph. Elen.* 166b28-36 he seems to retract (b) and (c)—and thereby diminish the range of applicability of (d) and (e). And at 179a37-b1, in discussing how one can know Coriscus and yet not know the person coming, he says something equivalent to

- (f) For all  $x$  and  $y$ , if  $x$  and  $y$  are the same and  $x$  and  $y$  are one in substance, then if  $\Phi$  is predicated of  $x$ ,  $\Phi$  is predicated of  $y$ .

And he denies that the conditional will be true if  $x$  and  $y$  are not one in substance.<sup>9</sup> I shall shortly try to bring out some similarities between this doctrine and that of the *Meta.* But first it should be mentioned that the fact that *De Soph. Elen.* is commonly thought to be roughly contemporaneous with *Topics* does not guarantee that only one doctrine will be presented. I do not view Aristotle's (soon to be shown) change between the *Topics* and the *Meta.* as necessarily being one of temporal development. Rather, I see it as a change due to

different concerns being investigated. Thus, for example, the *Categories* is possibly even earlier than the *Topics*, yet we would not be surprised to find a *Meta*.-like explanation of 'sameness' there. Instead, there is a change in the subject matter under consideration, and this manifests itself in different pronouncements about, e.g., 'sameness'. Of course, this could be taken as evidence to show that *De Soph. Elen.* is much later than the *Topics*—that it is roughly contemporaneous with *Meta.* V and *Physics*, but I would not be happy to insist on this.<sup>10</sup>

Let me now demonstrate that Aristotle's use of 'sameness' in *Meta.* VII 6 is considerably different than the *Topics* use. Towards the beginning of *Meta.* VII 6, he gives two reasons for one of his stranger doctrines—the doctrine that "accidental unities" are not identical with their "essences." The first of the two reasons is the following (where a pale man is the example of an accidental unity):

... (a) pale man would be thought to be different from the essence of (a) pale man. For if they are the same, the essence of (a) man and that of (a) pale man are also the same; for (a) man and (a) pale man are the same thing; as they say, so that [the essence] of (a) pale man and that of (a) man would also be (the same). (But perhaps it is not necessary that these accidental (unities) are the same; for the extreme terms (in the preceding reasoning) don't become the same in the same way (with the middle term).) (1031a20-25)

A number of things should be said about this translation. First the indefinite article does not normally appear in Greek; it is usually to be supplied, as here done in parentheses. Second, the phrases within angle brackets are my additions for clarity; they are clearly intended by Aristotle. Third, the addition in square brackets is merely a clearing up of the reference of 'that'. Fourth, the phrases of the form "the essence of (a) X" are translations of the Greek τὸ X (dative) εἶναι, more literally translated "being (a)X" or "the being of (a)X".<sup>11</sup> And fifth, it is clear that the "as they say" means that we are to assume that some man is a pale man.

Ross recasts Aristotle's reasoning here like this.<sup>12</sup>

If (1) a white man = the essence of white man  
 then, since (2) a man = a white man  
 therefore, a man = the essence of white man.

If (1) is true, similarly (3) the essence of man = a man  
 therefore, the essence of man = the essence of white man.  
 But this is not true, therefore (1) is false.

I think this reconstruction of Aristotle's thought embodies deep and serious misunderstandings of Aristotelean doctrine.<sup>13</sup> I give here two reasons for doubting that Ross has adequately captured Aristotle's meaning. I will follow them up with a general exposition of some relevant Aristotelean notions, and then come back to show that my general exposition can be usefully applied to this argument (and also to the second argument for the same conclusion).

The first problem with Ross' reconstruction is that it is a valid argument, employing some form of the rule of inference we call "Leibniz's Law" (e.g., transitivity).<sup>14</sup> Aristotle thinks all the premises are true, but at 1031a23-25 points out that the *reductio* fails, "for the extreme terms ['the essence of man' and 'a pale man'] don't become the same in the same way with the middle term ['a man']." Any reconstruction of the argument has to make it be invalid, and invalid by invoking something like "different kinds of sameness."<sup>15</sup> It must also explain where Ross' (3) comes from—to say 'similarly' is not very helpful. As it stands, it appears to presuppose the proof later in *Meta.* VII 6 that per se entities (e.g., (a) man) are identical with their essences.

The second problem with Ross' reconstruction again turns on the fact that he uses our modern '=' to capture Aristotle's sense of 'the same'. But his cannot be correct, as we can see from how Aristotle opens his discussion of *Meta.* VII 6. He makes three claims:

1. We must inquire whether each thing and its essence are the same or different
2. For each thing is thought [by common assent] to be not other than its substance
3. And the essence is said [by common assent] to be the substance of each thing.

If (2) and (3) are true (as Aristotle seems willing to grant) then the inquiry indicated in (1) would seem to be pointless unless 'the same' is not transitive. Since '=' is transitive, we should



hesitate to use it in reconstructing Aristotle's arguments involving 'the same'. Further evidence along the same lines that Aristotle did not view 'the same' as transitive can be gathered from the fact that he held both (4) and (5), denies (6).<sup>16</sup>

4. Socrates is the same as the essence of (a) man
5. Callias is the same as the essence of (a) man
6. Socrates is the same as Callias

This much I think is clear: the Ross/Tredennick version of this argument is faulty. And its faults have, at least in part, to do with their identification of Aristotle's locution 'the same' with our notion '='. It is to this mistake I would like to address my remarks.

### III

Many of Aristotle's technical locutions generate "oblique contexts"; that is (as we would say), when names denoting the same entity are substituted for one another in such contexts, the truth value of the containing sentence is not always preserved.<sup>17</sup> For example

7. Socrates is a primary substance  
is true, while
8. This pale thing is a primary substance  
is not true, even if Socrates is this pale thing. Again,
9. Socrates is a per se unity  
is true, but
10. This pale thing is a per se unity

is not, under the same circumstances as before. The same remarks could be made for the phrases of the form 'α has an essence', 'α is a per accidens unity', 'Φ is predicated as of a subject of α', 'Φ is a cause of Ψ', 'α is a subject', 'Φ is essential for α', 'Φ is that in virtue of which Ψ', etc. (And, as we will see below, 'α is the same as β' is oblique too).<sup>18</sup> Nonetheless, there are cases where we are allowed to substi-

tute into these contexts: Aristotle himself quite often does it—e.g., in the arguments given later in *Meta.* VII 6 to the effect that per se unities are identical with their essences; and the principle mentioned above as (f) would seem to be designed to justify such substitution. It seems to me that the reason Aristotle gives to justify this is that he is using a “strengthened” notion of identity. (Let me make it clear that this “relation” is *not* stronger in the sense of holding between fewer entities in the domain—that is, in being a subset of the diagonal relation on the domain. Indeed, the relata of this relation are not individuals or entities at all, as we shall see. Rather, I mean ‘stronger’ in the sense of licensing more substitutions—in more distinct contexts—than the relation ‘=’ does.) I shall, in the following pages, make some comments on this “strengthened” notion of identity, hoping to give a firm enough account to be able to evaluate the validity of proofs using this notion—in particular, those proofs at the beginning of *Meta.* VII 6.

## IV

The obvious place to look for Aristotle’s meaning when he uses ‘the same’ is *Meta.* V 9 where it is “defined.” There he says that there are two kinds of sameness: an “accidental” one and an “essential” one. I wish to draw attention to an important feature in Aristotle’s account of this notion: these types of sameness are given a “linguistic” description. That is, we are *not* told that

11.  $\alpha$  is the same as  $\beta$ 

means that the denotation of  $\alpha$  and the denotation of  $\beta$  are the same, but rather what we are told amounts to the claim that the *description*  $\alpha$  has a certain relation to the *description*  $\beta$ . I.e., the analysis given of what it is for objects (or: an object) to be the same is in terms of relations between *expressions which denote them* (it). And it is differences in this relation between expressions which gives rise to the different kinds of sameness. He says that the pale one and the educated one are *the same* in an accidental sense because education and paleness are (accidental) properties of the same subject; and (he continues) if paleness is a property of some man, then that man and that

pale one are again the same in this accidental sense.<sup>19</sup>  $\lceil \alpha$  is essentially the same as  $\beta \rceil$  is true if the *descriptions*  $\alpha$  and  $\beta$  are related in one of the ways a thing is said to be “one by its own nature,” viz., if (a) the “matter” indicated by  $\alpha$  is the same in number as the “matter” indicated by  $\beta$ , or (b) the “matter” indicated by  $\alpha$  is the same in kind as the “matter” indicated by  $\beta$ , or (c) there is a unity of  $\sigma\upsilon\nu\sigma\acute{\iota}\alpha$  and  $\lambda\acute{o}\gamma\omicron\sigma$  of  $\alpha$  and  $\beta$ .

It looks like we are going in a circle here, since we are explicating ‘the same’ by a phrase using ‘the same’. Perhaps a few of Aristotle’s examples will help (but again, perhaps not): Things that are called one in sense (a) above are a bundle of wood, glued-together wood, and in general anything that forms a continuum: things that are called one in sense (b) above are water, oil, and in general all juices and melted things. These examples are difficult, but regardless of whether we understand these examples, neither of these kinds of essential unity are very important to the discussion at hand. I want to concentrate on sense (c) above.

Ross ([28]: Vol. 1 pp. 311-2) thinks that the three kinds of “sameness” mentioned here in *Meta.* V correspond directly to the three kinds of numerical sameness of *Topics* I 7. This seems to me to clearly be wrong. Besides the obvious difficulties of reconciling the examples given in *Meta.* with the account of the *Topics*, there is the difference in logical characteristics attributed to the relations.<sup>20</sup> The *Topics* takes ‘denotes the same object’ or ‘different names of the same object’ as the primary semantic relation, while the *Meta.* talks about unities of definition of the terms used to denote the objects. Further, as I’ve already indicated, Aristotle’s ‘the same’ seems either to deny symmetry or transitivity; ‘numerical sameness’ does not do this.

I view Aristotle’s apparent change in opinion about sameness (or, minimally, his different accounts) as a reflection of his deep thought concerning various metaphysical concepts such as substance, essence, etc. I wish to take these differences at face value and not carp at their (apparent) weirdness. Whatever relation we end up with after examining Aristotle’s *Meta.* use of ‘sameness’ is what counts as what Aristotle called ‘sameness’, regardless of whether we would want to call it by that name. I think Aristotle’s theses in *Meta.* VII 6 are important; I want to consider them in their own right, and not dismiss them because of (what we would call) a clumsy and incoherent doctrine of identity.

## V

If we want to understand Aristotle's doctrine of 'sameness', there are two preliminary "syntactic" changes that must be made in formulae of the form  $\lceil \alpha = \beta \rceil$  in order to edge closer towards Aristotle's  $\lceil \alpha \text{ is the same as } \beta \rceil$ . We first must be prepared to allow indefinite descriptions to be appropriate substituends for  $\alpha$  and  $\beta$ . I am not prepared to say now what the semantics for this change would amount to, but it could perhaps be viewed along the lines of Reichenbach's  $\eta$ -operator ([27]: 264ff). We secondly must be prepared to face the fact that Aristotle allows (what we would call) non-individuals to be the same (Man is the same as The Laughter) and also allows (what we would call) things of different "types" to be the same (Socrates is the same as being a man, Fire is the same as that which naturally travels upward). Once again, it is not obvious what the truth conditions for sentences of this form are. Perhaps we can understand what it is for non-individuals to be the same as set equality or maybe as extension-in-all-possible-worlds equality, but clearly this will not work for sameness of things of different "types."

But perhaps we can be temporarily happy with something like this. Suppose we have a language with '='. We also have an intuitive notion of what is an individual and what is a property in "ordinary discourse." But it is, from a formal point of view, a matter of indifference what the variables of the language are assigned as values—we could assign them what we intuitively feel are individuals or what we intuitively feel are properties. Aristotle apparently also wants to add that we could assign values to the variables of open sentences of the type ' $x = y$ ' such that ' $x$ ' is assigned (what we intuitively feel is) an individual and ' $y$ ' is assigned (what we intuitively feel is) a property.<sup>21</sup>

One must keep in mind the warning given above. It will not be to the point to claim later on (say when inspecting an Aristotelean proof) that there is some muddle involved because an individual is said to be the same as a property. We are defining a *new* relation that does have that feature. It may be that at this point in the explanation there is a muddle, but that is because we are only part way up the ladder. After we have a grip on the new notion the ladder must be thrown away. The price of not using the ladder is that the structure must be built from the ground up, and that is a difficult task in Aristotelean exegesis.

## VI

Part of what's needed to unuddle the explanation is an account of some Aristotelean technical terms. A glance at the beginning of *Meta.* VII 6 and at V 6 and 9 shows that we need to at least have a partial understanding of 'necessity', 'essentiality', 'substance', and 'essence'. The following explication is brief, too brief to stand on its own, but I think correct in its essentials.

Let us begin with the notion of necessity. It has been often pointed out that the notion of "absolute" or "simple" necessity in Greek philosophy generally and especially in Aristotle is somehow connected with temporality and change, and is not what *we* would call necessary truth.<sup>22</sup> One way of putting the matter is this: necessary properties are the kind of property a thing does not (cannot?) lose and continue to exist. Thus for example, since Socrates necessarily can acquire knowledge, as soon as this property is lost (as when Socrates dies), Socrates ceases to exist. Or, since Socrates is necessarily a man, and wolves are not men, as soon as an event occurs that we could correctly describe as: "Socrates was sitting at the fireplace, immediately following this there was a wolf composed of the same matter as Socrates sitting at the same fireplace"; we can conclude that Socrates no longer exists. I think the following two conditions are necessary and conjunctively sufficient for the truth of sentences of the form  $\ulcorner \alpha \text{ is necessarily } \Phi \urcorner$ .

13.  $\alpha$  is  $\Phi$

14. Anything that is  $\Phi$ , is  $\Phi$  for as long as it exists.

Before we continue looking at these Aristotelean technical locutions, let me pause to defend this criterion as an analysis of Aristotelean necessity as this concept is of particular importance in what follows.

A. (Against the necessity of 13 and 14) [Objection]: "You of course want to allow *some* property (say, that of being  $\Phi$ ) to be necessarily-predicated of  $\alpha$ . Now it seems that whatever it is that makes being  $\Phi$  be necessarily-predicated of  $\alpha$  would also make any property entailed by being  $\Phi$  be necessarily-predicated of  $\alpha$ , for instance being  $\Phi$  or  $\Psi$ . Thus  $\ulcorner \alpha \text{ is necessarily } \Phi \text{ or } \Psi \urcorner$  is true. But then, by condition (14), everything that is  $\Phi$  or  $\Psi$  is so for as long as it exists. However, there are

some properties  $\Psi$  that are *not* necessarily-predicated of what they are true, and so the things to which they belong aren't  $\Psi$  (and so aren't  $\Phi$  or  $\Psi$ ) for as long as they exist. This objection can be briefly put thus: If ' $\alpha$  is necessarily  $\Phi$ ' is true, then ' $\alpha$  is necessarily  $\Phi$  or  $\Psi$ ' is true. But there are many things of which  $\Phi$  or  $\Psi$  is predicated but not necessarily-predicated. However, condition (14) says that if a predicate is necessarily-predicated of one thing, it is necessarily-predicated of anything it is true of."<sup>23</sup>

[Answer]: The objection hinges on the transition from the truth of ' $\alpha$  is necessarily  $\Phi$ ' to the truth of ' $\alpha$  is necessarily  $\Phi$  or  $\Psi$ '. It is claimed that whatever makes  $\Phi$  be necessarily-predicated of  $\alpha$  must make  $\Phi$  or  $\Psi$  be necessarily-predicated of it (even if  $\alpha$  is not  $\Psi$  at all). But this is quite wrong. What makes ' $\alpha$  is necessarily  $\Phi$ ' true is that  $\Phi$  is a certain kind of property (and of course that  $\alpha$  is  $\Phi$ ), namely a property such that whatever is  $\Phi$  is  $\Phi$  for as long as it exists. There is nothing about the *way in which* something is  $\Phi$ —rather it is *what*  $\Phi$  itself is. (Compare with the property of being  $\Phi$  or not- $\Phi$ . This is necessary for everything, regardless of whether being  $\Phi$  or being not- $\Phi$  are individually.)

B. (Against the sufficiency of 13 and 14) [objection]: "'Exists' turns out to be necessarily true of everything that did, does, or will exist, since anything that exists exists for as long as it exists."

[Answer]: The only allowable instances of  $\alpha$  is necessarily  $\Phi$  have terms that indicate a property as substituends for ' $\Phi$ .' However, at least for Aristotle, 'exists' does not indicate a property. He would say: 'exists' has many senses, but in its primary meaning it is applied to (first) substances—the only allowable instances for ' $\alpha$ ' in ' $\alpha$  is necessarily  $\Phi$ '. But such an application is not a further qualification of the substance—it is part of being a first substance to begin with. Thus 'exists' does not indicate a property; hence, it cannot be a necessary property.

C. (Against the sufficiency of 13 and 14) [Objection]: "There are properties which turn out to be necessary that we do not want, due to the temporal nature of condition (14). E.g., being born at 10 am Oct. 12, 1931, having an ancestor who died of the bubonic plague, and in general the true ascription of some



are necessary, and so the conjunction of (13) and (14) is sufficient for the truth of  $\lceil \alpha \text{ is necessarily } \Phi \rceil$ . What all this does point to, however, is the difference between the truth of  $\lceil \alpha \text{ is necessarily } \Phi \rceil$  and the truth of  $\lceil \alpha \text{ is essentially } \Phi \rceil$ . To get sufficient conditions for this latter, we have to add to the above conditions

15. (14) is a necessary truth.

This is not circular, for here we are using a different notion of necessity, namely our modern one of logical truth. (Remember that we are not starting with nothing and building up Aristotle's philosophical vocabulary, but rather we are trying to grasp a certain point in Aristotle using every tool at our disposal. It may be true that Aristotle had no such notion as logical truth, but we do and that is what is required for the present task.) I do not care to go into the truth-conditions for (15); most philosophers do believe they can give (15) some kind of sense. Those who do not so believe would be unhappy with almost anything said by or about Aristotle. But it should be noted by everyone that, by Quinean arguments,<sup>24</sup> in a sentence of the form  $\lceil \alpha \text{ is essentially } \Phi \rceil$ ,  $\alpha$  and  $\Phi$  cannot take as values "ordinary" things such as people and properties. In this the present constructions are considerably different from the *Topics*' doctrine of numerical sameness. It is therefore enormously difficult to give the relevant clause of a truth-definition for sentences of the present form. Besides the difficulty with condition (15) one would find it very difficult to cast (14) into first-order predicate logic without using a predicate meaning " $x$  exists at  $t$ " in addition to quantifiers. And it would be very difficult to give philosophic sense to such a predicate.<sup>25</sup>

We still have two more Aristotelean notions to discuss: substance ( $\sigma\upsilon\sigma\tau\alpha$ ) and essence ( $\tau\delta\ \tau\acute{\epsilon}\ \eta\upsilon\ \epsilon\acute{\iota}\nu\alpha\iota$ ). These are probably Aristotle's most involved notions, and nothing I could say in a page or two would come anywhere near taking account of all Aristotle's claims about them. Let me make these points though, in justifying what I will say about these notions: First, I am here only interested in the claims Aristotle makes close to *Meta.* VII 6—that is, of particular importance are *Meta.* VII-IX; and second, I shall give only the bare minimum necessary to evaluate the proofs of *Meta.* VII 6.



Substance (in the sense of *Meta.* VII, VIII, IX) seems to be a property that physical objects have. (Or at least that is how I shall take it. Perhaps it is better to say 'the substance of'). But not just any physical object has a substance; the object has to be "natural" or "have a nature."<sup>26</sup> Furthermore, substance indicates a "unity" when applied to physical objects. Thus, for example, being a man indicates a unity but being earth does not. One way of putting this condition is that a term signifies a property that indicates a unity only if that term is a sortal term. The "essentiality conditions" (13)-(15) above capture a large part of what substance is. Putting those conditions together with the present considerations we get:

Substance is an essential property, signified by a sortal term, of physical objects that have a nature.

The essence of  $\alpha$  (in the present sense) is a property of  $\alpha$  which can be indicated by a definition of what it is to be  $\alpha$  (see *Meta.* VII 5, 1013a10-15). Without trying to explain this any further (except to emphasize a difference between essence and essentiality), I propose to adopt the terminology 'Def( $\alpha$ )' to stand for the essence of  $\alpha$ .

Sketchy as this account is, it does give us sufficient information to see what is going on in *Meta.* VII 6. To see this, let us return to Aristotle's account of sameness.

## VII

*Meta.* V distinguishes, as noted above, various kinds of "essential sameness" and contrasts them with "accidental sameness." I picked one of these kinds of "essential sameness" for special attention—that kind where "there is a unity of λόγος and οὐσία." I have also indicated why these generate oblique contexts, in contradistinction to the numerical sameness of the *Topics*; in particular one should note that such claims as

16. Socrates is accidentally the same as this snub-nosed man
17. Socrates is essentially the same as this man  
will be true according to the *Meta.* doctrine, while
18. Socrates is accidentally the same as this man

19. This snub-nosed man is essentially the same as this man

will be false, even when 'Socrates', 'this snub-nosed man', and 'this man' all denote the identical entity. According to the *Topics*, since these phrases are all "different names of the same entity" the following will all be true

20. Socrates is numerically the same as this snub-nosed man  
 21. Socrates is numerically the same as this man  
 22. This snub-nosed man is numerically the same as this man

And although Aristotle distinguishes different kinds of numerical sameness ("accidental", "proper property", and "by definition"), as can be seen from the definition (N.S.) above, all the following are true

23. Socrates is numerically the same by definition as this snub-nosed man  
 24. Socrates is numerically the same by accident as this man  
 25. This snub-nosed man is numerically the same by definition as this man

The reason we might never assert (23)-(25), given that we still held the *Topics* doctrine, is simply that we would normally want to make exactly as "strong" an assertion as can be "justified" by the sentence asserted. And so in (23) and (25) we would normally only assert 'the same by accident' since that's all the sentence "justifies"; while in (24) we would normally assert 'the same by definition'. Nonetheless, these are all true. (Compare asserting 'There are three students in my class' when there are also in fact 50. The "weak" sentence is true, but we would not normally assert it.)

This is not the case with the *Meta.* sameness. There Aristotle is trying to introduce a relation between *ways of identifying* an object. Essential sameness amounts to *sameness in manner of identifying* an object. And, apparently, accidental sameness

amounts to identifying an object accidentally. The wrinkle in all this is that Aristotle has (what we would call) strange ideas concerning what 'sameness in manner of identifying' amounts to. One part of this wrinkle has been mentioned already (section V): It is apparently the case that a predicate cannot only "identify" an individual, it can do it in the same manner as a singular term. Thus we get statements like

26. Socrates is essentially the same as being (a) man

I am not going to do anything like giving a complete semantical account of *Meta.*'s sameness; rather I intend to show some of the things it is supposed to do. We might begin by listing some of the ways we can make true assertions of sameness. First a brief account of accidental sameness: Let's use 'A' as the symbol for this relation, lower case Greek letters at the beginning of the alphabet to range over singular terms ( $\alpha$ ,  $\beta$ ,  $\gamma$ ), and upper case Greek letters toward the end of the alphabet to range over predicate expressions ( $\Phi$ ,  $\Psi$ ,  $\Sigma$ ). (Again, I reserve the term 'identical' to stand for *our* concept of sameness in these explications of Aristotle's concepts.)

27. If (a) either  $\alpha$  or  $\beta$  indicate an accidental unity, and (b)  $\alpha$  and  $\beta$  both denote the identical entity, and (c) should  $\alpha$  and  $\beta$  both indicate accidental unities, they indicate different accidents, then  $\lceil A(\alpha, \beta) \rceil$  is true.

According to (27), and standard examples of accidental unities,

28. A(this pale man, this animal)

is true. The point of the antecedent of (27) is to rule out the following, all of which are false:

29. A(this man, this man)

30. A(this pale man, that educated man)

31. A(this educated man, this educated man)

That is, at least one of  $\alpha$  and  $\beta$  must indicate an accidental unity, they must denote the same entity (the 'this' and 'that' of (30) are intended to point to non-identical people), and they

must indicate a different accident of the same unity. Note that (27) claims that 'A' is symmetric, but not transitive (and of course not reflexive, as (31) shows). Both of (32) and (33) are true, but (34) is not:

32. A(this pale man, this educated man)

33. A(this educated man, this pale man)

34. A(this pale man, this pale man)

even though (34) would follow from (32) and (33) by transitivity. For essential sameness, let us use the symbol 'E'.

35.  $E(\alpha, \alpha)$

36.  $E(\Phi, \Phi)$

ought to be true, although to the best of my knowledge Aristotle never gives any examples of these forms.<sup>27</sup> Let us now bring in some of Aristotle's technical apparatus discussed in section VI above.

37. If  $\lceil \alpha \text{ is essentially } \Phi \rceil$  is true, then  $\lceil E(\alpha, \Phi) \rceil$  is true.

38.  $\lceil E(\Phi, \Psi) \rceil$  is true if and only if (i) there is something which is essentially  $\Phi$  and also essentially  $\Psi$ , and (ii) anything is  $\Phi$  just in case it is  $\Psi$ .

According to (37) we have such truths as (for the parenthetical part of (39), see the preceding footnote)

39.  $E(\text{Socrates, (being a) man})$ .

The restrictions in (38) are first to rule out "empty" properties and second to account for the falsity of

40.  $E((\text{being a) man, (being an) animal})$

As I have tried to justify in Section III there is some relation which licenses substitution in Aristotle's oblique contexts. I think that relation to be 'E'. It is, if not identical to, at least closely related to claim (f) above: the "solution" to the "masker paradox" of *De. Soph. Elen.* 24. In fact, 'E' does license

substitution in all the contexts discussed in this paper except those specifically designed to deny it—viz., ‘is accidentally the same as’, ‘is a primary substance’, ‘is a species’, ‘is essentially the same as’. And even then, by placing some obvious restrictions on the form of the relata of ‘E’, we could substitute even in these contexts. I shall discuss one of these contexts, ‘E’.

As noted above in discussing (4)-(6), ‘E’ is either not transitive or not symmetric. If we deny transitivity, it looks as though we have an explanation of the puzzle with (1)-(3) and also a parallel with ‘A’. Unfortunately the matter is not quite so simple, for to deny transitivity is to deny substitution into contexts of the form

41. — is essentially the same as. . .

and Aristotle *does* use some sort of substitution into this context in the proofs of *Meta.* VII 6. So we have to find adequate restrictions on the principle of substitution into contexts containing ‘E’ so we can both explain why

42. E(Socrates, Callias)

is false in spite of the truth of

43. E(Socrates, Man)

44. E(Callias, Man)

and why Aristotle was even interested in the question of VII 6, given (2) and (3).

One thing we might do is to rule that the relation is not symmetric and that substitution is permitted as long as the substituted symbol occurs on the same side of the ‘E’ in both premise and conclusion. So the following would be valid

45.  $E(\alpha, \beta), E(\beta, \gamma) \vdash E(\alpha, \gamma)$

46.  $E(\alpha, \beta), E(\beta, \Phi) \vdash E(\alpha, \Phi)$

47.  $E(\alpha, \Phi), E(\Phi, \beta) \vdash E(\alpha, \beta)$

48.  $E(\alpha, \Phi), E(\Phi, \Psi) \vdash E(\alpha, \Psi)$

and similarly where in place of the singular term  $\alpha$  we have a predicate expression  $\Sigma$ . However, this denial of symmetry

does injustice to some of Aristotle's claims, for not only is 'Man is essentially the same as (an) animal that goes on two feet' true, but from this it is supposed to follow that 'Animal that goes on two feet is essentially the same as (a) man' is true. So we should perhaps allow the following:

49.  $E(\alpha, \beta) \vdash E(\beta, \alpha)$

50.  $E(\Phi, \Psi) \vdash E(\Psi, \Phi)$

and only deny symmetry in cases where one side of the 'E' is a singular term and the other a predicate. This is not necessarily to say that there cannot be cases where the singular term is in the first position of the 'E' and cases where the singular term is in the second position, and a predicate on the other side; it is not even to say that

51.  $E(\alpha, \Phi) \ \& \ E(\Phi, \alpha)$

cannot be true—just that one conjunct does not imply the other.

Our rules (35)-(38) and (45)-(50) do not permit the derivation of (42) and (43) and (44), and so solve that problem. However, we have not yet solved our puzzle with (1)-(3). Merely looking at the form of (1)-(3) would have us believe (1) is derivable from the others (I treat 'not other than' as a double negation of 'the same as'—vide *Meta.* V 9),

52.  $E(\alpha, \Psi)$

53. not-not- $E(\alpha, \Phi)$

54.  $E(\Phi, \Psi)$

where (52)-(54) are the formal representations of (1)-(3) respectively. Note that (52) is derivable from (53) and (54) by the principles of double negation and (48). So, why did Aristotle want to inquire into the truth of (1)?

## VIII

There are two readings of phrases like 'the essence of (a) pale man'. According to one reading, the oblique one, we are to find the essence indicated by 'a pale man'. According to the

other reading, the transparent one, we are to find the essence of something which happens to be a pale man—in this case, find the essence indicated by ‘man’. If we are asked whether Socrates, who is a pale man, is the same as his essence, we could understand the request in either of the two ways: Is (55) true? Is (56) true?

55.  $E(\text{Socrates}, \text{Def}(\text{a pale man}))$

56.  $E(\text{Socrates}, \text{Def}(\text{man}))$  & Socrates is pale

Presumably, (55) is false and (56) true, according to Aristotelean doctrine. More generally, when asked whether a thing is the same as its essence, we can understand the request as being about the truth of either (57) or (58)

57.  $E(\alpha, \text{Def}(\alpha))$

58. If ‘ $\Phi$  is the substance of  $\alpha$ ’ is true, then ‘ $E(\alpha, \text{Def}(\Phi))$ ’ is true.

Statement (57) turns out to be false in general (according to Aristotle), since it is false when  $\alpha$  indicates an accidental unity. Statement (58) turns out to be true (according to Aristotle) and amounts to the claim that per se unities are the same as their essences.<sup>28</sup>

We can now consider the arguments against (57). Assume (57) is true, then both (a) and (b) or (59) will be.

(59)(a)  $E(\text{a pale man}, \text{Def}(\text{a pale man}))$

(b)  $E(\text{a man}, \text{Def}(\text{a man}))$

(c)  $E(\text{a man}, \text{a pale man})$

So, (d)  $E(\text{a man}, \text{Def}(\text{a pale man}))$  (from (a) and (c))

So, (e)  $E(\text{Def}(\text{a man}), \text{Def}(\text{a pale man}))$  (from (b) and (d))

But (e) is absurd (according to Aristotle) therefore (57) must be false. But now we can see the relevance of Aristotle’s comment on the unacceptability of this proof: Statements (b) and (c) make different kinds of assertions of sameness. The sameness claimed in (c) does not allow the substitution required to

get (d). And this reconstruction of the proof explains where (b) comes from without resort to the proofs for (58)—a feat that Ross did not accomplish.<sup>29</sup>

The second proof against (57) is at 1031a25-28.

. . . but this might be thought to follow, that the extreme terms, the accidents, should turn out to be the same, e.g., the essence of pale and that of musical. . .

Ross reconstructs the argument this way (Vol. II, p. 177):

the musical man = the essence of musical man

the man = the musical man

the white man = the man

the essence of white man = the white man

So, the essence of white man = the essence of musical man

So, the essence of white = the essence of musical

Note that the argument is valid at least down to the second to the last line. (It is hard to see how the last line follows from the second-last,<sup>31</sup> but presumably Aristotle has some special force intended by 'essence'). So Ross' only comment on the argument: "[It] is, of course, unsound," seems not to be well-taken. If he is going to reconstruct arguments by using '=', he must be willing to abide by the semantics of '='.

I would reconstruct this argument like this: From (57) both (a) and (b) follow:

- (60)
- (a) E(a pale man, Def(a pale man))
  - (b) E(a musical man, Def(a musical man))
  - (c) E(a musical man, a pale man)
  - (d) E(a musical man, Def(a pale man))  
                                            (from (a) and (c))
  - (e) E(Def(a musical man), Def(a pale man))  
                                            (from (b) and (d))
  - (f) E(Def(musical), Def(pale))                         (from (e))

(Again, (f) does not seem to follow from (e) without some special understanding of 'Def'; but perhaps we ought to more



seriously consider the procedure outlined in the last footnote for eliminating the need for (f)). Finally, note that the argument is invalid, and for the same reasons as the first argument was—as Aristotle notes at 1031a28.

## IX

After he has discussed thesis (58) and decided that it is true, Aristotle makes a strange move (1032a10) when he claims

We have explained, then, in what sense each thing is the same as its essence and in what sense it is not.

He does not remark aloud that the falsity of (57), a thesis he continues to hold, rests upon arguments which he himself acknowledges to be invalid.

## X

The discussion in this paper has been for the most part semantical. That is, we have discussed the validity of various argument-forms involving the locution ‘\_\_\_ is the same as. . .’ in the writings of Aristotle. I have not discussed the reasons *why* Aristotle should hold his views concerning “the relationship between ways of identifying something.” In the study of an historical figure, the order of discussion should perhaps start with a study of *what* he did and then proceed to study why it was done. This latter study has been started by various people (Code ([9], [10]), Ferejohn ([11]), Kung ([19]), Matthen ([21]), Furth ([12])), but to carry on that discussion would be a different work from the present one.

Among the things I hope to have shown in this paper is that commentators cannot blithely use a modern notion in evaluating a position held by an ancient philosopher. Just because Aristotle uses words that we would normally translate as ‘the same’ does not imply that his technical notion means the same as our ‘=’. Ours is derived from Leibniz and Locke (and perhaps ultimately from Aristotle’s *Topics*). Aristotle gave up the *Topics* notion.

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## NOTES

<sup>1</sup>Especially since the appearance of White ([31]). White does not wish to consider *Metaphysics* VII, which he says is even later than *Metaphysics* V, because the "ideas differ importantly from the earlier works."

<sup>2</sup>I shall not consider *Meta. X* 3.

<sup>3</sup>I ignore all claims about "relative identity." I am in full agreement with the discussion in White ([31]: 178). I shall be somewhat sloppy in what I call "Leibniz's Law". Here I have called it the schema

$$(x = y) \equiv_{df} (\Phi x \equiv \Phi y)$$

—with appropriate restrictions to avoid "confusion" and "collision" of variables, of course. The second order definition, which has also often been called "Leibniz's Law", is this:

$$(x = y) \equiv_{df} (F)(Fx \equiv Fy)$$

The difference in the two formulations is that in the second-order definition the predicate variable ranges over all properties that there are; whereas in the schema, the values of  $\Phi$  are expressions of the language in question. It may be, for a particular language, that there are not sufficient resources to name all the properties there are. It may also be that some of the values of  $\Phi$  do not name properties at all.

<sup>4</sup>Also stated at 133a32-34.

<sup>5</sup>This requires a certain understanding of 'accident', and I leave it to others to so understand it. See, for example, Code ([9], [10]).

<sup>6</sup>This is a much wider principle than (b). It includes (b)—and also a similar principle for  $\lambda\delta\iota\omicron\nu$  properties stated at 133a27-30—as special cases.

<sup>7</sup>This requires an understanding similar to the one mentioned in fn. 5. Note that (e) includes (c) as a special case.

<sup>8</sup>A word is perhaps in order about my use of quotations and display. I use them as they are used in (say) the works of Richard Montague. Single quotes form names of the word or phrase within, or are used for quotes within quotes. Double quotes are used for quotation and as "scare quotes." Corner (or quasi) quotes (' ' and ' ' ) are employed more or less along the lines of Quine ([25]) viz., in connection with expressions of the object language, but in situations in which not all constituents of the expressions are definitely specified. Roughly speaking the convention is this. If  $\Phi_1, \Phi_2, \dots \Phi_N$  are designatory expressions of the metalanguage (say, names of German expressions or variables referring to German expressions) then the expression ' $\Phi_1, \Phi_2, \dots \Phi_N$ ' is to designate the concatenation of the expressions to which  $\Phi_1, \Phi_2, \dots \Phi_N$  refer. If however, any of  $\Phi_1, \Phi_2, \dots \Phi_N$  are not designatory expressions of the metalanguage but rather individual words of the object language, we first replace such words by their quotation names. For instance,  $\Phi$  if is an expression of German, then ' $\text{fahren } \Phi$ ' = ' $\text{fahren } \Phi$ ' = the result of writing 'fahren' followed by  $\Phi$ ; ' $\text{schlafen}$ ' = ' $\text{schlafen}$ ' = 'schlafen'; and ' $\text{es regnet}$ ' = ' $\text{es regnet}$ '. Display serves the same purpose as quasi quotes. Greek letters serve as metalinguistic variables, that is, they take object language expressions as values (e.g., German or English). Normally, lower case Greek letters are reserved for taking singular terms as values, upper case Greek letters for taking general terms as values. Roman letters serve as object language variables and take appropriate entities as values (e.g., people or properties).

<sup>9</sup>I do not propose to discuss Aristotle's "solution" to this puzzle in any detail. Some discussion is given in White ([31]), and a complete, thorough examination of it can be found in Peterson ([23]).

<sup>10</sup>White ([31]: 179) asks us to compare *De Soph. Elen.* 179b1-4 with *Physics* 212b14-16 in this regard.

<sup>11</sup>The importance of this dative construction is discussed at length in Anscombe ([1]).

<sup>12</sup>Vol. II, p. 176. The same reconstruction can be found in Tredennick ([29]: 330-1).

<sup>13</sup>One of the things I shall not argue about is Ross' use of the indefinite singular term as standing on either side of '='. This is indeed difficult to understand, and I take my account given below as preferable partially because it offers an explanation of this. But I shall not object to Ross on this matter now.

<sup>14</sup>I shall later come back to this point, discussing whether Aristotle ever uses, or even thinks valid, "Leibniz's Law." Here I simply note that Ross uses '=' as capturing the meaning of Aristotle's 'the same' (*ταὐτόν*), and "Leibniz's Law" holds for '='.

<sup>15</sup>On Vol. II p. 177 Ross says "The extremes are not identical in the same way. . . the major term is absolutely identified with the middle, while the minor is identical. . . only *per accidens*." Presumably he thinks his reconstruction captures this feature. I have no idea why he might think that.

<sup>16</sup>Since transitivity is a special case of "Leibniz's Law", viz., into contexts of the form 'is the same as', this would show that Aristotle had no concept corresponding to any of the features of modern identity, '=' (which is defined by reflexivity and "Leibniz's Law"). It should perhaps be mentioned here that because transitivity is usually stated

$$x = y, y = z \vdash x = z$$

the arguments (1)-(3) and (4)-(6) in the text do not just use transitivity, they also use symmetry. So perhaps Aristotle would not deny transitivity, but rather symmetry. This is still, of course, to deny that Aristotle has anything like our '='. It is of some interest to note that Bochenski ([5], [6]) can find no statement of either symmetry or transitivity of 'the same' in Aristotle's logical works.

Aristotle asserts (4) and (5) as consequences of his doctrine in the second half of Z 6—that per se unities like Socrates and Callias are identical with their essences. Of course there are going to be some difficulties with Z 10 1036a17ff, Z 11 1037a7-9 and 1037a10ff, which are put in some kind of "hypothetical" mood; but no matter how those passages are understood, Z 6 and Z 17 are unambiguous on his insistence that sentences like (4) and (5) are true. Besides being common sense, Aristotle denies (6) at 1034a5-8. Of course, he actually says that the compound of form and matter which is Callias and the compound which is Socrates are different because of matter (though they are the same in form). Nonetheless, this in itself shows that Aristotle's use of 'the same' here is not what it was in the *Topics*. It should be noted that denying (6) follows from Aristotle's claim that they are different because of matter.

<sup>17</sup>This is an important idea. It has enormous repercussions for interpretation of practically any part of Aristotle's work. I learned it from Sandra Peterson ([23]); she gives credit (modestly and perhaps a little generously) to D.C. Bennett ([3]).

<sup>18</sup>Textual justification for such remarks can be found in Peterson ([23]).

<sup>19</sup>Ross translates *τὸ λευκόν* and *τὸ μουσικόν* as "the pale" and "the musical" (that is, with single quotes). Warrington ([30]) uses single quotes without the 'the'. Tredennick ([29]) and Hope ([16]) use double quotes here, without the 'the'. It is not obvious what the function of either the single or double quotation marks is. Kirwan ([17]) translates without quotes as 'the pale' and 'the artistic' thereby avoiding having Aristotle making the logical blunder of talking about what it is for two expressions to be the same. However, translating as 'the pale' or 'paleness', 'the musical' or 'musicality', is unhappy in that it garbles Aristotle's point here. To capture his meaning we want to translate it as 'the pale one' or 'the pale thing', so that it is a certain object (under that description) which is said to be the same, and not the qualities which are said to be the same. (After all, it is trivially true that, even for Aristotle, paleness and musicality are not the same.) Using 'the pale one' or 'he who is pale', etc., as followed by Pickard-Cambridge's *Topics* ([24], see A 7), more clearly brings this out.

<sup>20</sup>A terminological point to be recalled: 'numerical sameness' is the name of the *Topics*' relation, 'identity' or '=' is the name of our modern relation, and 'sameness' (sometimes with 'accidental' or 'essential') is the name of the *Meta.* relation.

<sup>21</sup>Of course all of this is from the point of view of trying to get us to understand Aristotle's doctrines. Doubtless Aristotle would have in the back of his mind some caveat to the effect that our intuitive beliefs about "ordinary language" are wrong and that we just don't understand fully the individual/property distinction. But for the time being in the explanation this might satisfy him.

<sup>22</sup>E.g., by Ackrill ([1]: 132-42), Hintikka ([13], [14], [15]), Anscombe ([2]: 7), Kneale ([18]: 45-54), Ross ([28]: Vol. I, p. 299).

<sup>23</sup>For example: Suppose being a man is necessarily predicated of Socrates. Then being a man or pale is necessarily predicated of Socrates. So by condition (14), everything that is a man or pale is so for as long as it exists. A counterexample to such a claim is Socrates' complexion.

<sup>24</sup>As for instance in Quine ([26]).

<sup>25</sup>Ray Elugardo (see fn. 31) has pointed out to me that these three conditions are the same as those in Bennett ([4]). Bennett, however, gives them for being a necessary property. A further condition, that of being a sortal property, is required for being an essential property.

<sup>26</sup>Justification of this is at *Meta. Z* 17 and H 3:

Since some of the things are not substances, but as many are substances as are constituted in accordance with a nature of their own and by a process of nature (1041b28-30)

Perhaps these things themselves [houses, utensils] are not substances, nor any of the other things which are not constituted by nature (1043b21-23).

<sup>27</sup>Due to the fact that Aristotle gives no examples like (31), (34) or (35), the evidence for imputing the falsity of (31) and the truth of (35) to him has to be indirect. My evidence is indirect indeed, but has already been given: that 'sameness' here amounts to "sameness in manner of identifying". Accidental sameness differs from essential sameness, then, in that the former relation states that the manners of identifying the individual are different but happen to identify the same individual while the latter relation asserts that they are essentially the same (i.e., that there is but one manner of identifying them). From this it follows that (31) is false, since 'this educated man' and 'this educated man' are not distinct ways of picking out the same individual. Another way of explaining the difference, one which is rejected here, would be to say that accidental sameness occurs when an individual is picked out by some accidental predication and claimed to be the same as some individual. Essential sameness occurs when an individual is picked out by an essential predicate. With this understanding, (31), and (34) would be true, while (35) would be false in general. I think this latter way must be incorrect, since then the conclusion Aristotle is wondering about, whether accidental unities are essentially the same as their essences (see (59a) below), would be trivially false and require no argument. (Because under this understanding, no accidental unity can be essentially the same as anything).

In these kinds of statements we might note that there is a certain problem with the substituends of the metalinguistic predicate variables. Some of the things Aristotle says, e.g., 'Socrates is the same as (a) man' fit the model fine, while others come out sounding ungrammatical, e.g., 'Socrates is the same as pale'. It should also be noted that Aristotle sometimes uses the gerundal form: 'Socrates is the same as being (a) man', 'Socrates is the same as being pale'. Furthermore, as indicated in fn. 11, it is sometimes the case that the sentence should be translated with a supplied 'one' or 'thing': 'Socrates is the same as a pale thing'. I think it a virtue of my account that it tries to encompass all of these locutions.

<sup>28</sup>I will not discuss the arguments for (58) to be found in the remainder of *Meta. Z* 6. They rely upon facts about Platonic forms and about knowledge. However, a cursory look at them shows that Aristotle relies upon substitution into "knows that" contexts, and I think it most probable that the relation 'E' will be indispensable in an adequate reconstruction of these arguments.

<sup>29</sup>Although it should be conceded that Ross could have adopted a solution like this also.

<sup>30</sup>It possibly is supposed to follow by some sort of "functionality principle"—i.e., the supposed definitions on each side of '=' justify us in dropping 'man', since it occurs on either side. Supposedly, then, any difference between the complex terms must reside in the terms other than 'man'. However, this does require some special understanding of 'Def', since the inference is not generally valid. From 'the least prime number = the even prime number' we should not derive 'least = even'.

Another possibility is that, following Code's ([9], [10]) line (alluded to in fn. 5), the "accidents" are *not* the properties 'musical' and 'pale'. They are rather the entity *so characterized*—compare my remarks in fn. 19.

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