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PARTICULARS AND PERSISTENCE

*Princeton University*

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PARTICULARS AND PERSISTENCE

by

Mark Johnston

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in  
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## Abstract

The thesis is concerned with the outline of an ontology which admits only particulars and with the persistence of particulars through time. In Chapter 1 it is argued that a neglected class of particulars -- the cases -- have to be employed in order to solve the problem of universals, i.e., to give a satisfactory account of properties and kinds. In Chapter 2, two ways in which particulars could persist through time are distinguished. Difficulties are raised for the view that everything perdures through time, i.e., the view that each persisting thing is a sum of continuous and dependent temporal parts. Objections to the view that people perdure are presented in Chapter 3, objections to the effect that such a view (the so-called Complex View) cannot capture salient truths about the nature of experience and wrongly implies that our special concern for ourselves, our friends and our familiars is irrational. An alternative account of persisting particulars is provided in Chapter 4 by way of giving a theory of substances. Finally, in Chapter 5, this alternative account is applied to the issue of personal identity and to the issue of the identity over time of living things in general. A Hylomorphic View of living things is sketched and briefly defended.

Throughout, certain themes recur: essentialism is taken to be relatively unproblematic, various connections between time and modality are exploited, reductionism is regarded as bearing the onus of proof, characterless entities such as prime matter, substrata, bare particulars and haecceities are rejected and the differences between the animate and the inanimate are emphasized.

Thanks to my advisor Saul Kripke and to David Lewis for their help with this thesis and for numerous conversations on related matters. For those who know their views I need not add the conventional disclaimer to the effect that they do not agree with everything that follows.

Thanks also to David Kaplan who is partly responsible for this thesis having been much less time-consuming than it otherwise would have been.

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## Chapter 1 -- Cases

### 1. The Problem with Particularism

Let us think of a universal as a thing which is or could be a common part of many particulars -- a common part, but not a common spatio-temporal part. For a wall between two row houses is not a universal even though it is a spatio-temporal part common to both houses. (A part is a spatio-temporal part just in case it is necessary that if two or more things have that part in common then they overlap in space-time.) If a universal existed and was exemplified then it would be wholly present in each of the particulars which exemplified it. All of the universal would be present in each of the particulars which exemplify it. Those particulars would be similar in virtue of having the universal as a common part.

A single universal is thus repeatable in many particulars and so across many space-time regions. Its repetitions can be independent in the sense that it is not in general required that if the universal exists in two non-overlapping regions then its existence in one of those regions is part of the explanation of its existence in the other. (As we shall see in Chapter 2 there are particulars repeatable in many space-time regions, but their repetitions cannot be independent.)

I have no other grip on the doctrine of universals than that given by the independent repeatability gloss. In fact this allows for universals in rebus but not so-called Platonic universals, i.e. forms or paradigms which are supposed to exist in some realm to which we had pre-natal access. All the better; if forms existed, they would be weird particulars to which

ordinary particulars were weirdly related. And it is hard to see why an ordinary particular, say Socrates, could have a property, say snubnosedness, in virtue of being related to a weird particular. It doesn't help just to call the weird particular 'the form of snubnose' and the weird relations 'imitation' or 'approximating to'. One wants to know how it is that the weird particular and the weird relation deserve these names. It won't do to say that the weird relation is really similarity in disguise and the form is a paradigm of snubnosedness. For if that is the answer, Socrates won't be snubnosed in virtue of his relation to the form. Rather he will be related to the form in virtue of being snubnosed. One then wonders why the form is needed at all. Couldn't Socrates be a paradigm of snubnosedness?<sup>1</sup>

The ontological framework within which the central claims of this thesis are to be presented is a Particularist framework. Only particulars are admitted. But in showing how to do without universals we can get clear on what sorts of particulars there are.

The Particularist takes for granted some initial totality of things -- the individuals. These are to be particular, i.e. not independently repeatable in space-time, and either spatio-temporally located or causally related to some spatio-temporally located thing. (Thus if God exists he gets in even if he is not located in space-time. Let us regard the whole of space-time as trivially located at itself.) The more liberal Particularists, of whom I am one, believe in a larger totality of individuals got by allowing arbitrary mereological summation, so that for any collection

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1. For a thoroughgoing defense of universals in the sense I have in mind see D. M. Armstrong, Universals and Scientific Realism, Vols. I and II (Cambridge University Press, 1978). Armstrong, like M. Tooley and F. Dretske, also believes that laws of nature are relations between universals. See M. Tooley, "The Nature of Laws", Canadian Journal of Philosophy, 7, 1977, and F. Dretske, "Laws of Nature", Philosophy of Science, 44, 1977.

of undetached parts of any collection of individuals there is an individual which is their sum.<sup>2</sup>

The Particularist generates all the particulars he believes in by treating his individuals as the first level of a cumulative class hierarchy. The second level comprises all items at the first level and all classes of items at the first level. The third level comprises all items at the second level and all classes of items at the second level, and so on. Nothing universal appears in this hierarchy.

I suppose that many of us are Particularists. Our ontology is something like impure class theory with individuals as ur-elements. We are involved in many family disputes about just what individuals there are. But we face a common enemy -- the friend of universals.<sup>3</sup> I suggest that if we are to defeat him we must settle our family disputes in a certain way. We must believe in what I call cases of properties and kinds.

Here is the challenge which we Particularists face from the friend of universals. We seem to quantify over and refer to properties as well as to individuals. In this context properties are to be understood not as mere intensions, i.e. semantic values for arbitrary predicates, but as things such that if two individuals both have one of these things then they are ipso facto similar.<sup>4</sup> Such properties are had by individuals. They are not

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2. On mereological summation see H.S. Leonard and N. Goodman, "The Calculus of Individuals and Its Uses", The Journal of Symbolic Logic, 5, 1940, and pp. 34-36 below.

3. Perhaps other common enemies also, e.g. the friend of numbers who thinks that no class-theoretic reduction of numbers is plausible. I wish to avoid that battle here. Also I wish to remain as neutral as possible on what the correct theory of classes is.

4. Of course one could stubbornly insist that one does not understand "x and y are similar" unless it means that there is some predicate which x and y satisfy, so that any two things are similar in an infinite number of ways. Compare N. Goodman, "Seven Strictures on Similarity", in his Problems and Projects (Bobbs-Merrill, 1972). However Goodman admits that similarity

individuals and so are not present at the first level of the Particularist hierarchy. Thus for the Particularist, either properties are classes of some sort or the true sentences which seem to require the existence of properties do not. But the noncommittal Nominalist paraphrases typically offered as a way of avoiding commitment to properties deviate wildly from the surface form of the problematic sentences. They seem to be about many things which the ordinary sentences do not engage with. And each of the proffered identifications of properties with classes of some sort is open to serious objection. So the Particularist ontology, even if it does include everything particular, seems doomed to leave out a whole category of things. These are the properties. The friend of universals draws the moral that they are not particular but universal. They are wholly present in the many particulars which have them, which is to say that they are common parts of the particulars which have them.

Here are some sentences which express truths and which seem to involve quantification over and reference to properties and kinds.

- (1) The more properties individuals have in common the more they are like each other.
- (2) Not all the properties of fundamental particles have been discovered.
- (3) The property of electrons which explains their repelling each other and attracting protons is their charge.
- (4) Every property of a positron is a property of a lepton.

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is well used on the streets. I would add that it is also well used in the laboratory. Scientific investigation can be understood as revealing the real similarities. Why should the language of the philosopher's classroom be subject to a stricter standard?

- (5) Alexander had some of the virtues of his teacher Aristotle and they enabled him to endure adversity.
- (6) Acquired properties are not inherited.
- (7) Red is a color.
- (8) Red resembles orange more than it resembles blue.
- (9) There is a property of being green but no property of being grue.<sup>5</sup>
- (10) The rose is a kind of flower but there is no kind consisting of the emeroses.<sup>6</sup>

For these sentences and their ilk I know of no systematic scheme of paraphrase which is Nominalist in the sense of turning up paraphrases with referring terms only for individuals and quantifiers ranging only over individuals.<sup>7</sup> On the other hand if we introduce classes of individuals --

5. x is grue iff x is examined before the year 2000 and is green, or is blue otherwise.

6. x is an emerose iff x is examined before the year 2000 and is an emerald, or is a rose otherwise.

7. For example, L. Goldstein in "Scientific Scotism", Australasian Journal of Philosophy, 61, 1983 offers

(11)  $(\exists x) (\neg \text{adjective 'f'})$  ('f' is irreducible and is applicable to physical bodies and x is a physical body and it has not been discovered that 'f' truly applies to x)

as a Nominalist paraphrase for

(11') There are undiscovered fundamental physical properties.

As he notes, (11) cannot be the complete Nominalist paraphrase since it presumably quantifies over adjective types. The complete Nominalist paraphrase must eliminate this quantification as well. Goldstein mentions Sellars' account as the only complete story about how this is to be done. But I suspect that once the quantification over adjectival types is eliminated by means of Sellarsian dot quotation and appeal to the notion of linguistic role, the resultant paraphrase for (11') will be rather tortuous.

In any case it is unclear to me how Goldstein's metalinguistic paraphrase for (11') could be part of a systematic Nominalist treatment of the sentences I have cited. For example, with respect to (9) it is just not the case that the difference between the predicate 'green' and the predicate 'grue' is that the first is an irreducible predicate and the second is not.

the individuals that have the property in question or are members of the kind in question -- as the denotations of apparent property names or kind terms, we then need to say something about how these classes are distinguished from classes of individuals which have no common property or belong to no common kind, e.g. the class of grue things or the class of emeroses.

The friend of universals is in a position to answer this question. He will say that the classes which are the denotations of property and kind terms like 'green' and 'rose' are unified in virtue of their members sharing or having universals. Here the theory of universals can take one of two forms. Either it can postulate a universal for every property term and kind term or it can allow only a small collection of universals, e.g. the fundamental properties and kinds of physics, which are held to be sufficient to explain all similarities. On the first version, the members of the class of green things will all share a universal greenness while the members of the class of grue things share no universal. On the second version, the

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7. Ctd. 'Green' is interdefinable with 'examined', 'grue' and 'bleen' where something is bleen if it is blue and examined before the year 2000; otherwise green. The difference between 'green' and 'grue' might be captured by something like

(12) All possible individuals to which 'green' applies resemble each other, not so with all possible individuals to which 'grue' applies.

As we shall see, this is not quite what is wanted. For presumably all the grues, like all the greens are all alike in being extended. I conjecture that once these difficulties are dealt with, the resultant true sentence which the Nominalist offers as a paraphrase will guarantee that a certain resemblance class or function could perfectly well play the role of being the denotation of 'green'. Going this way would obviate the need to deviate from surface form. We could simply take 'Green is a property' to be of simple subject-predicate form, as it seems to be.

Of course, if the Nominalist is someone who does not believe in classes then he has a reason to stick to his deviant paraphrases. But then he has the very unpromising task of paraphrasing away apparent reference to classes on the part of mathematicians. Good luck to him; fortunately such paraphrasing is no part of the Particularist program.

distinction between a real property and a mere intension corresponding to no property will be operative at the level of fundamental properties. The members of the class of things with unit negative charges will share the universal unit negative charge. Not so with the things which are either examined and have unit negative charge or are unexamined and have unit positive charge. However, an advocate of the second version must tell a different story about the distinction between 'green' and 'grue'. For he will regard neither of these as names for universals. The best he can do, it seems, is to say that the members of the class of green things have universals which make them appear similar. Not so with the members of the class of grue things. But here the friend of universals is making a concession -- there are apparent similarities not explicable by the sharing of universals.<sup>8</sup>

The challenge for the Particularist is to do the same work without resort to postulating universals which make many individuals similar by being common parts of them. How then is the Particularist to account for the unity of a class of things with a property in common or of a class of things of a kind? He thinks that general names, and property names among them, could only pick out classes with individuals as their ultimate constituents. But if 'grue' is not a property name, what distinguishes the sort of class which it picks out from the sort of class picked out by a real property name like 'green'?

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8. The second version of the theory of universals corresponds to that offered by D. M. Armstrong in Armstrong op. cit. Frank Jackson seems to endorse the first version in "Statements about Universals", Mind, 86, 1977.

The Particularist's answer seems obvious. Whereas the members of the class of grue things do not all partially resemble each other, e.g. a bluebird and a green patch, the members of the class of green things do partially resemble each other.<sup>9</sup> So the natural Particularist thought is that properties and kinds -- the denotations of property names and kind terms -- can be identified with some sort of resemblance classes of individuals.

Unlike the friend of universals, the Particularist believes that partial resemblance or similarity needs no explanation in terms of having a common qualitative part. If similarity is not to be explained in that way it is hard to see how it is to be explained or analyzed at all. So given that the notion does make pre-analytic sense and there is a vast amount of non-collusive agreement about which things are similar, the Particularist in good conscience can take a dyadic relation of similarity between individuals as primitive, i.e. well enough understood to theorize from even in the absence of an analysis. He may then go on to identify properties and kinds with resemblance classes of individuals, viz., classes such that every member of the class is similar to every other and no non-member is similar to every member. In this way the Particularist might hope to identify each property with the class of just those individuals which are similar in respect of having it and each kind with the class of just those individuals which are similar in respect of being of that kind. And he could hope to achieve this just by using the relation of partial similarity, not by employing as a primitive for each property a relation of similarity in respect of that property and for each kind a relation of similarity in respect of that kind.

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9. The fact that this is so makes very unattractive the view that the difference between names like 'grue' or 'being grue' and names like 'green' or 'being green' is just primitive .

This natural Particularist proposal -- to take properties and kinds to be resemblance classes of individuals -- does not work. It is instructive to see why.

First, it seems that two distinct properties could be had by just the same individuals so that the Particularist would wrongly identify distinct properties if he took properties to be resemblance classes of individuals. There may be fundamental particles of a certain kind which all have a certain mass and a certain charge. Imagine that although nothing else happens to have either of these properties, it would be possible to create a particle with the mass in question but without the charge in question. The technical difficulties in creating such a particle are never solved. In the situation imagined there is the class of fundamental particles. It is a resemblance class. There is as much reason to identify it with the property of having the charge in question as there is to identify it with the property of having the mass in question. However it cannot be identified with both, for these are distinct properties as is illustrated by the possibility of there being a particle with the mass but not the charge.

The second problem begins with the familiar observation that some designators of properties and kinds are rigid designators.<sup>10</sup> The Particularist view of properties being considered identifies properties with resemblance classes so that rigid property designators are, on that view, rigid class designators. For example, if 'F' is a rigid property designator then it picks out the resemblance class consisting of just the actual Fs and it picks out that resemblance class in <sup>e</sup>every world in which it picks out

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10. That natural kind and property designators are rigid is argued by S. Kripke in Naming and Necessity (Harvard, 1980), pp. 131-37 and by H. Putnam in "The Meaning of 'Meaning'", Philosophical Papers (Cambridge, 1975), Vol. 11, pp. 240-44.

anything. I suppose that a class cannot change its members from possible world to possible world.<sup>11</sup> I also suppose that a class exists in a possible world only if its members exist in that world.<sup>12</sup> An immediate consequence of these two principles is that a resemblance class rigidly denoted by 'F' exists in a world only if it has just the same members in that world as it has in the actual world and those members exist in that world.

Now, on the view of properties being considered, an individual's having-in-the-actual-world the property rigidly designated by 'F' just comes down to its being a member-in-the-actual-world of the resemblance class rigidly designated by F, i.e. the class of the actual Fs. So it seems that an individual's having-in-the-world-w the property rigidly designated by 'F' just comes down to its being a member-in-w of the resemblance class rigidly designated by F.<sup>13</sup> However, if a class cannot change its members from world to world then an individual is a member-in-w of the resemblance class rigidly designated by 'F' only if it is a member-in-the-actual-world of that resemblance class. So an individual will have the property F in some world w only if it is a member-in-the-actual-world of the resemblance class rigidly designated by 'F', i.e. only if it actually has the property F. Since any property can be rigidly designated, the consequence is that an individual could have a property only if it actually has it. This is intolerable. No

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11. Cf. R. Sharvey, "Why a Class Can't Change its Members", Nous, 2, 1968.

12. For we want to allow that any world could have been actual. And we do not want it to be the case under such a counterfactual supposition that there are class members which do not exist. Cf. A. Prior and K. Fine, Worlds, Times and Selves (University of Massachusetts, Amherst, 1977), pp. 125-30.

13. This is at least the most natural generalization of the view's account of what it is to have the property in the actual world.

more tolerable is the consequence that there is no possible world in which some of the actual Fs are F and the other actual Fs do not exist. This follows from the view of properties as resemblance classes and our two principles concerning classes and their members. For such a world would be one in which the resemblance class rigidly designated by 'F' does not exist because not all of its actual members exist in that world.

One offshoot of work on the completeness question in quantified modal logic is a conception of the intensions of predicates that suggests a Particularist account of properties which avoids these difficulties.<sup>14</sup> Once we begin to think of different things having different predicates true of them in different possible worlds it is natural to identify the intension of a predicate, e.g. 'is grue', with a function taking possible worlds as arguments and giving as values classes of individuals which exist in the argument world and are represented by the argument world as satisfying the predicate. The values are therefore extensions of the predicate in the argument worlds. If 'grue' is the general name associated with the predicate 'is grue' then it is natural to think of 'grue' as denoting the function which is the intension of 'is grue'.

As the example indicates, so far we have nothing which discriminates between general names like 'grue' which do not pick out properties and general names like 'green' which do. Once again an appeal to similarity relations seems to be what is required. A function from worlds to extensions will be a type (i.e. a property or kind) only if it is a resemblance function. There are two conditions on a function  $f$  from worlds to extensions for it to be counted a resemblance function: (i) for any individuals  $x$  and  $y$

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14. Cf. S. Kripke, "A Completeness Theorem in Modal Logic," The Journal of Symbolic Logic, 24, 1959; particularly pp. 2-3.

and worlds  $w_1$  and  $w_2$  if  $x$  is a member of  $f(w_1)$  and  $y$  is a member of  $f(w_2)$  then  $x$  as it is in  $w_1$  is similar to  $y$  as it is in  $w_2$ ; (ii)  $f$  should be maximal in this respect, i.e. there should be no thing in any world such that it stands in the right similarity relation to each member of any class which  $f$  assigns to any world but which is not a member of any of these classes. The right similarity relation is the cross-world relation which makes comparisons between things as they are in worlds --  $x$  as it is in  $w_1$  is similar to  $y$  as it is in  $w_2$ . This is to be taken as a primitive in place of the earlier primitive of unrelativized similarity.

Let us call the resulting conception of properties and kinds Modal Particularism. The Modal Particularist has it that such resemblance functions are rigidly designated by rigid property names or rigid kind names. Although these functions are themselves classes (of ordered pairs) which do not change their members from world to world, different classes could be associated with different worlds by the same function. From this point of view, the mistake behind the first account of properties and kinds was its identification of a property or a kind with what is in reality merely the extension of that property or kind in the actual world. This mistake also leads to the mis-identification of contingently and actually co-extensive properties.

The Modal Particularist's conception of properties seems to provide a natural way to introduce the distinction between properties or kinds and arbitrary intensions. It is therefore worth noting that it is a dismal failure.

The first problem that Modal Particularism faces is a modal descendant of Goodman's problem of imperfect community, a problem raised by him for

Carnap's project in the Aufbau.<sup>15</sup> The Modal Particularist's similarity constraint [(i) above] involves making pairwise comparisons of similarity between individuals which can be similar in a variety of respects. This invariably leads to difficulties. Suppose for example that 'F', 'G' and 'H' are property names. It will not in general be true that there is a property name 'J' such that something has J just in case it has F and G or has G and H or has F and H. For the Js need have no common property running through them. (E.g. F = redness, G = sphericity, H = being made of plastic). However the function  $f_1$  which assigns to each world the class consisting of all and only the Js of that world will satisfy condition (i) on resemblance functions. Each pairwise comparison of the Js will hold up because two things will have J just in case they are similar in respect of F or in respect of G or in respect of H. Moreover there is no general reason why such a gerrymandered function should not be maximal in this respect and so satisfy condition (ii). But then  $f_1$  will be counted a resemblance function, and 'J' a property name. However 'J' need not in general be a property name, depending on our choices for F, G and H.

Secondly, there is what we might call the problem of exhaustion, a modal variant of Goodman's problem of companionship.<sup>16</sup> Suppose the class of all actual and possible risibles (things capable of laughing) exhausts the class of all actual and possible human beings. Suppose also that hyenas are risible. Now we may suppose for the purposes of argument that the function which assigns to each world a class consisting of all and only the risibles

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15. N. Goodman, The Structure of Appearance (Bobbs Merrill, 1966), Chapter V. R. Carnap, The Logical Structure of the World (University of California Press, 1969). Saul Kripke made me realize that the modal variant of Goodman's problem of imperfect community holds against the Modal Particularist.

16. Goodman, Structure, op. cit., pp. 122-24.

of that world will satisfy the constraints and will therefore be correctly counted a property. Call the function in question "Risibility". We also wish to recognize the kind Human Being as some resemblance function or other. But which function is it? Intuitively, not Risibility, but a function which assigns to each world a sub-class of the class assigned to that world by Risibility, namely the class of all and only the humans in that world. But this will not be a resemblance function for it will not be maximal in the required respect. There will be some world  $w$ , e.g. one with a hyena in it, such that the class which the function Human Being assigns to  $w$  omits something which will be similar in the cross-world sense to each member of every class which that function assigns to a world. The omitted thing will be similar in respect of Risibility. So the function intuitively associated with the general name "Human Being" will not be counted a kind. Moreover, the requirement of maximality which generates this difficulty cannot be dropped on pain of counting too many functions as properties. If the requirement were dropped, not only would the function which assigns to each world the class of all and only the cherry red things in that world be counted a property, but also any function which assigned to each world some proper sub-class of the class of all and only the cherry red things in that world.<sup>17</sup>

A third serious, though less decisive, difficulty for Modal Particularism has to do with the criterion for individuating properties which it implies, viz., property  $F =$  property  $G$  just in case for each world the extension of  $F$  in that world is just the extension of  $G$  in that world. This seems like too gross a principle of discrimination. For example, consider

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17. Non-modal versions of both these difficulties could have been stated for the resemblance class conception of properties.

the two properties having the capacity for belief and having the capacity for desire. Because of the way in which these capacities are interdependent I do not think that there could be an individual with the one capacity and not the other. That is, I can make sense neither of the idea of a potential believer who was not a potential desirer nor of the idea of a potential desirer who was not a potential believer. Although the two capacities are necessarily had by the same individuals they are two and not one. They make distinct causal contributions to the mental operations of the individuals that have them. Similar remarks could be made about shape and size. For each example of this sort the Modal Particularist's strategy is to insist that the two alleged different properties if necessarily co-extensive are not to be distinguished by any difference in the contributions they make to the causal powers of things. This involves saying that Socrates' capacity for belief is his capacity for desire and that his size is his shape. But this feels like stonewalling. Why couldn't properties which make different contributions to the causal powers of individuals be nonetheless interdependent in such a way that they are necessarily instantiated in the same full-blooded individuals?<sup>18</sup>

A fourth problem has to do with the Modal Particularist's paraphrase of

(1) Necessarily red is a color

The Modal Particularist will have names for properties, e.g. 'R' for the property of being red, 'C' for the property of being colored, and 'E' for the property of being extended. Suppose 'Ext<sub>w</sub>( $\psi$ )' denotes the function which takes worlds and properties as arguments and gives the extension of the argument property in the argument world as its values. Then the Modal

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18. The force of 'full-blooded' will become clear soon; it just means individuals with more than a single characteristic.

Particularist's natural paraphrase of (1) is

$$(2) \forall w \forall x [x \in \text{Ext}_w(R) \supset x \in \text{Ext}_w(C)]$$

However, this seems to miss something crucial in the content of (1). For it is also true that

$$(3) \forall w \forall x [x \in \text{Ext}_w(R) \supset x \in \text{Ext}_w(E)]$$

where 'E' names the property of being extended. But it is either false or meaningless to say that

$$(4) \text{Necessarily red is an extension.}^{19}$$

A fifth difficulty arises once we ask what a possible world is. If one believed that worlds were large spatio-temporal particulars then one could include them among the individuals, which are at the first level of the Particularist hierarchy, so that they would appear as members of classes at all higher levels. Few of us are prepared to pay the price of regarding worlds as spatio-temporal particulars.<sup>20</sup> The other option for the

19. Compare D. M. Armstrong, op. cit., vol. 1, pp. 59-61, F. Jackson, op. cit., and A. Pap, "Nominalism, Empiricism and Universals", Philosophical Quarterly, 9, 1959. Each of these authors press other paraphrase difficulties for Particularism which I omit because I think that the Modal Particularist can readily handle them. For example

(1) A red thing and an orange thing could be more similar than a red thing and a blue thing could be

goes over as

$$(2) \exists x \exists y \exists w_1 \exists w_2 (x \text{ is red in } w_1 \ \& \ y \text{ is orange in } w_2 \ \& \ \forall w_3 \forall w_4 \forall z \forall u (z \text{ is red in } w_3 \ \& \ u \text{ is blue in } w_4 \ \supset \ x \text{ as it is in } w_1 \text{ is more similar to } y \text{ as it is in } w_2 \text{ than } z \text{ as it is in } w_3 \text{ is similar to } u \text{ as it is in } w_4))$$

20. For arguments to the effect that the price is not as high as we think see D. Lewis, Counterfactuals (Basil Blackwell, 1973), pp. 84-91. R. Stalnaker in "Possible Worlds", Nous, 10, 1976 adopts an alternative not available to the Particularist as I have introduced him in the opening pages above, viz. include non-spatio-temporally located and causally inefficacious possible worlds among one's individuals.

Particularist is to treat worlds as complex classes of some sort, classes which have individuals as ultimate constituents. There are various alternatives as to which classes are to be taken to be the possible worlds. The central alternatives from which many variants could be developed are (i) to identify worlds with maximal classes of consistent states of affairs or propositions, where states of affairs or propositions are in their turn identified with classes of certain sorts, e.g. classes of things and properties or relations; (ii) to identify worlds with maximal classes of ordered pairs of space-time regions and properties, which encode possible distributions of properties over possible space-time manifolds.<sup>21</sup> However, neither alternative (i) nor alternative (ii) seem to be available to the Modal Particularist. For they imply that properties first enter into the Particularist hierarchy at some level lower than that at which worlds first enter in. This is obvious in the case of alternative (ii) which involves identifying worlds with classes of ordered pairs of regions and properties. But it is so for alternative (i) as well. For no class without a component which deserves to be counted a property deserves to be counted a (non-relational) state of affairs or a (non-relational) proposition. The Modal Particularist is barred from employing any of these constructions of possible worlds because he conceives of properties as functions from worlds to classes. These functions are certain sorts of classes of ordered pairs with worlds in their first place and classes in their second. As such, they first appear in the hierarchy at some level higher than that at which worlds appear. It seems then that the Modal Particularist must identify possible

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21. For a discussion of alternative constructions of worlds and criticisms of them see P. Bricker, Worlds and Propositions (Doctoral Dissertation, Princeton, 1983). I do not accept the method by which he determines the cardinality of the class of possible worlds. This is crucial to several of his criticisms of various constructions.

worlds with classes which do not have properties as constituents. But how do you do that?

Sixthly, the friend of universals may object against the properties as classes line in general and the Modal Particularist's version of this in particular that the characteristics of individuals are not off in abstract heaven but are located where the individuals are located. For individuals operate causally in certain causal environments as a result of their characteristics being located within those environments and those characteristics being directly efficacious. It seems that anyone who takes the properties of things to be classes cannot count those properties or characteristics as directly efficacious. Rather, it seems that only full-blooded individuals could be allowed to be directly efficacious on such a view. But this just seems wrong. It is the weight of the dumbbell that makes is so hard to lift, not the dumbbell. How is the weight of the dumbbell to be counted as directly efficacious by the Modal Particularist? Surely that weight is a property of the dumbbell and so is identified with a class by the Modal Particularist. No class is directly efficacious even if we count it indirectly efficacious as a result of the efficacy of the full-blooded individuals which ultimately make it up.

Finally, the friend of universals has an attractive way of introducing an important distinction, a way apparently not available to the Modal Particularist. This is the distinction between intrinsic and partly extrinsic properties.<sup>22</sup> Depending on the individual in question, its

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22. Hereafter, for short, extrinsic properties. Since properties were introduced above as things such that if two individuals have one of them then they are ipso facto similar, the idea of a completely extrinsic property of a thing, i.e. a property whose holding of a thing depends not at all on the way that thing is, is a contradiction. So talk of partly extrinsic properties is really pleonastic.

intrinsic properties might be having certain parts, being made of certain stuff, having a certain internal structure, having a certain size, charge, or mass and properties which follow from those, e.g. having a certain density. Contrast the extrinsic properties of a thing, properties whose holding of a thing depend upon more than the way that thing is, that is, properties having to do with various relations between that thing and its environment, e.g. the property of actually attracting electrons, the property of being bonded to a proton, etc..

The distinction between intrinsic and extrinsic properties is a central one, close to ordinary notions such as the nature of a thing (= the totality of its intrinsics) and interdefinable with other notions likewise indispensable in doing metaphysics, i.e. in giving a general theory of how things hang together.

Here are some of the relations between these notions. While a property either is or is not at all an intrinsic property of a thing, a property may be more or less extrinsic to a thing. A property is more extrinsic to a thing the less its holding of a thing is a matter of the way that thing and nothing else is. A proposition which just ascribes an intrinsic property of a thing to that thing is completely about that thing. An ascription of an extrinsic property of a thing to that thing is about some larger whole which includes the thing. Necessarily, if two things are perfect duplicates then they have just the same intrinsic properties. However, perfect duplicates can have different extrinsics in virtue of being located in different environments.

The friend of properties as universals, i.e., as repeated in all the individuals which have them, has a nice way of breaking into this circle of notions. If a property is a universal wholly present in each of the many

individuals which have the property, then there is a quite literal sense in which the property is part of each of the individuals which have it. At least, this is so for intrinsic properties. A universal intrinsic to many individuals is a common part of each of them, just as a wall may be a common part of two row houses. So the friend of universals may say that a property is intrinsic to an individual just in case it is part of that individual. The notion of part employed here is just the most unrestricted notion of a part, a notion for which the axioms of mereology stated below purport to give the logic.

## 2. The Problem with Universals

The usual reason for rejecting universals in rebus concerns their independent repeatability across space and time. For example, the very same thing, a universal of unit negative charge, is supposed to be present in all the electrons that ever were, are or will be. The universal is not itself a sum of distinct parts drawn from each electron. No; its being wholly present in each electron is its being a common part of each. When a particular electron is destroyed the part of it which is unit negative charge is not destroyed but simply ceases to be part of the electron that is no more. So universals are rather peculiar if you are used to a strict diet of particulars. They do not fit the intuitions tailored for particulars. They are neither like classes nor like individuals.

This would be no objection to universals if postulating them were the only way to deal with the problems facing the Particularist. As we shall see in Section 3 and Section 4, it is not the only way. But here I wish to offer a decisive objection to thinking of the characteristics or properties of things as universals present in them. This could be called the Prime Matter Objection: if you believe in universals then you are compelled to believe that each individual has an utterly characterless part which distinguishes it from its duplicates.

Consider some individual and the collection of universals wholly contained within it. The collection includes that individual's intrinsics and any properties intrinsic to its parts which are not properties of it. The sum of these universals will be a sum of parts of the individual, the parts which make up the total character of the individual. So far we haven't gone beyond the doctrine of universals as outlined in Section 1. Even if the

friend of universals rejects arbitrary mereological sums, I do not see how he can find fault with the notion of the total character of an individual.

But now we should ask the friend of universals just what else there is to the individual in question. The dilemma is either nothing else or a characterless something. If there is nothing else, then the consequence is the absurd view that complete duplication -- two individuals having the same total character -- is impossible. For two individuals could not be made up of just the same parts, at least in the extended sense of 'part' in which a universal is a part of a thing.

The other alternative is to allow that besides the individual's total character it has a further part that could not be shared by it and its complete duplicates. This further part must be utterly characterless. Otherwise what gives it its character would be universal and shared by complete duplicates. However the idea of an individual having an utterly characterless part is absurd.<sup>24</sup>

The friend of universals might try to get round this dilemma by means of a verbal maneuver. He might say that the part of an individual other than its total character is not utterly characterless since it is united with the individual's total character. But this does not really avoid the absurdity associated with postulating a part of a thing other than its total character. For the point stands that this part has no intrinsic character, i.e. it has no characteristic as a part of it.

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24. Not even a space-time region is utterly characterless. Physics studies the properties, intrinsic and extrinsic, of space-time regions. Among these properties are granularity, curvature, etc..

The space-time location of a non-regional individual -- the region the individual occupies -- is not part of the individual. It is extrinsic to the individual for it is not shared by individuals which are duplicates of the individual.

Call the part of an individual which is devoid of intrinsic character the prime matter of the individual. The absurdity of allowing that individuals contain prime matter can be illustrated by the following example. Suppose we have two gold statues, complete duplicates of each other. One of the gold statues is melted down into a gold bar which happens to be a complete duplicate of an already existing gold bar. Now what is to be made of the truth that the statue that was melted down has been destroyed on the theory that the statue was a sum of its universal parts and its prime matter? The universal parts which made it up, including the internal relations between those parts, still exist in the duplicate statue which was not melted down. So its prime matter or part of that prime matter has been destroyed. (Unless the friend of universals says this he is forced to say that the gold statue that was melted down continues to exist after it was melted down.) Now the gold bar which came into existence as a result of the melting of the statue must have come into existence with its own prime matter. For it is distinct from its duplicate. Either that prime matter is a proper part of the prime matter of the statue that was melted down or it is no part of the prime matter of the statue. On the first horn, assuming that what holds for the gold bar holds in general, we arrive at the bizarre thought that if the gold of the bar is used to make a succession of statues by successive castings and melt-downs then all of the prime matter which is part of the gold bar may be gradually used up so that eventually we will have a gold statue or a gold bar which it is impossible to duplicate!

On the second horn, at least part of the prime matter of the bar produced by the melting of the statue must mysteriously come into being during the melting down of the statue. But where does this new prime matter come from? And why should not such prime matter exchanges be taking place

all the time so that the ordinary individuals around us are constantly being destroyed and replaced without our ever noticing it or ever being able to notice it? Since prime matter has no intrinsic character, no part of it is a characteristic which has characteristic causal consequences, so the substitution of one bit of prime matter for another seems to be the sort of thing which could have no causal consequences. Thus, we are not able to conclude as a result of any inference to the best explanation of observed continuity that the prime matter of an apparently persisting thing has not been exchanged unbeknownst to us.

These bizarre lines of thought are indications that a philosophers' entity, of whose conditions of persistence we know nothing, has been introduced to shore up the doctrine of universals. They also indicate that there seems to be no well-motivated way of specifying those conditions of persistence. So I think we should jettison the philosophers' entity. If we jettison prime matter we must also jettison universals in rebus on pain of counting duplication impossible.

In an exchange with Michael Devitt and W. V. Quine, D. M. Armstrong, by way of defending universals in rebus, says "While we can distinguish the particularity of a particular from its properties, nevertheless the two factors are too intimately together to speak of a relation between them. The thisness and the nature are incapable of existing apart from each other. Bare particulars and uninstantiated universals are vicious abstractions (in the non-Quinean sense of 'abstraction' of course) from what may be called states of affairs: this-of-a-certain-nature. The thisness and the nature are therefore not related."<sup>24</sup> This suggests that Armstrong would reject the

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24. Symposium "Nominalism", Pacific Philosophical Quarterly, 61, 1980.

view that an individual's total character or nature and its prime matter or particularity are distinct parts of an individual. This seems to me to involve either rejecting the principle of mereology according to which there is always a proper part of a whole which is distinct from any other proper part of that whole -- a principle which strikes me as very difficult to reject -- or fudging on what it is for a universal to be wholly present in many particulars so that this does not come down to those particulars having a common part.

Certainly, any friend of universals who believes in the possibility of duplication cannot consistently say that the thisness or particularity of an individual and its nature or total character are incapable of existing apart from each other. Compare the two gold statues; surely if the total character of the one is a sum of universals, that total character also exists separately from the particularity of that statue. For that total character is also present in the second gold statue together with the particularity of the second gold statue.

In an attempt to tie particularity and character together in a way which makes nonsense of their decomposition, Armstrong here as elsewhere<sup>25</sup> suggests that what we are primarily presented with are states of affairs, out of which we benignly abstract individuals and instantiated universals and viciously abstract bare particulars and uninstantiated universals. On the contrary, states of affairs seem to me to be composite entities made up of individuals, properties and perhaps places and times. Moreover what Armstrong calls a state of affairs, not that this thing has a certain nature or property but this-of-a-certain-nature, strikes me as obviously an individual. The phrase

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25. Universals and Scientific Realism, Chapter 11, Section 111.

"this-of-a-certain-nature", so far as I understand it, could be used to indicate the individual involved in a state of affairs, e.g.

"This-of-a-certain-nature is beloved by Mary" where the use of the demonstrative is accompanied by a demonstration of an individual. It could not be used to name a state of affairs. For example, it could not significantly fill the gap in "That ... is a fact". Despite its awkwardness, it makes sense to say "That this-(thing)-of-a-certain-nature is beloved by Mary is a fact" but it does not make sense to say "That this-of-a-certain-nature is a fact" any more than it makes sense to say "That Fido is a fact".

There is a way of conceiving of an individual so that its character and its particularity are not distinct. It will be the burden of Section 3 to explain this conception. Unfortunately for the friend of universals, the conception can only be had by taking the characteristics of particulars to be as particular as the particulars themselves.

### 3. A World of Cases

In Section 1 we encountered grave difficulties for two natural Particularist accounts of properties and kinds. In Section 2 the major difficulty with taking properties to be universals was outlined. What then is the solution to the difficulties facing a Particularist account of properties and kinds? I contend that all these difficulties can be solved by recognizing some neglected individuals -- the cases.<sup>26</sup> Cases are the particular characteristics of ordinary individual things and of space-time regions, i.e. the particular features and doings of these things. Cases are dated particulars, they begin to exist and cease to exist at particular times. The cases which are features of individual things can be destroyed by destroying part or all of the individuals whose features they are. Their presence in ordinary individuals accounts for the causal powers of those individuals. The cases which are the doings of individuals or the undergoing of changes by individuals are events. They are involved in the causal operations of individuals. Wherever the friend of universals in rebus would see a universal instantiated by an ordinary individual, the friend of cases instead sees a characteristic of the individual which is as particular as the individual itself.

Here are some sentences which could be taken to be about cases.

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26. I take the term 'case' from Nicholas Wolterstorff, On Universals (University of Chicago Press, 1970). In this century cases were first discussed by G. F. Stout in "The Nature of Universals and Propositions", Proceedings of the British Academy, 1921-2, Vol. X, pp. 157-72 and "Are the Characteristics of Particular Things Universal or Particular?" Proceedings of the Aristotelian Society, 1923, Vol. 3, pp. 95-128, a symposium with Stout, G. E. Moore and G. Dawes Hicks. A sub-class of the cases, the tropes, is recognized by D. C. Williams in "The Elements of Being" in his Principles of Empirical Realism, ed. M. Ruja (Charles Thomas, Springfield, 1966). K. K. Campbell revives tropes in "The Metaphysics of Abstract Particulars", unpublished.

1. The roughness of the table-top was planed away by the carpenter.
2. Diane's capacity to do long division was destroyed by the accident.
3. As the temperature rose the ice statue began to lose its shape.
4. The strength of Achilles enabled him to defeat many foes.
5. The glass shattered when it fell because of its fragility.
6. The stabbing of Caesar by Brutus caused Anthony's desperate anger at Caesar's funeral.

The underlined nominals could be taken to pick out cases. However, the brief for cases primarily concerns the work they do in providing for a plausible and systematic metaphysics. Recent fashion notwithstanding, metaphysics does seem prior to semantics in at least one way -- we must find out what there is in order to find out what we could be talking about. So the argument for cases will in no way depend upon assuming that there is nothing moot or indeterminate about the semantic structure of such sentences or that we can read off the nature of a case from just any ordinary language nominal which might be plausibly held to denote it.

Since ordinary language nominals can be ambiguous or misleading it is best to invent a terminology for referring unambiguously to cases. Every case or particular characteristic is a case of some type or other. It is exhibited by, is a characteristic of, some individual or other. Many cases will be exhibited by individuals at some but not other places and at some but not other times. So we may speak of a case of type F (or of the kind F or of the property of being F) exhibited by an individual at a spatio-temporal region.

Some practice in using the unfamiliar terminology may be in order. When referring to the shape of something spherical one might be taken to be referring either to the property or type sphericality or to a case of this

property exhibited by the particular sphere in question.<sup>27</sup> Suppose the particular sphere in question is a ball bearing. Then as well as the case of being spherical exhibited by the ball bearing there is the case of being made of a certain portion of steel exhibited by the ball bearing. The first case is located where the ball bearing is located just as long as the ball bearing retains its spherical shape. The second case is located where the ball bearing is located so long as the ball bearing remains constituted by the portion of steel in question. By squashing the ball bearing a little the first case could be destroyed. By chipping away at it the second case could be destroyed.

When a beer glass falls off a bar and breaks this is not the direct causal consequence of the dispositional property fragility, not even of the completely determinate sort of fragility had by all beer glasses of the same sort. The causally relevant factor is the fragility of the glass that fell, this being a case of that determinate sort of fragility, a case exhibited by the glass that fell and not by any other glass of the same sort.

When Brutus stabbed Caesar what occurred then and only then was not the action type stabbing but a case of this -- the stabbing of Caesar by Brutus -- a case of stabbing exhibited by Brutus in the senate on that fateful day.

Now the basic strategy in dealing with the problems outlined in Section 1 will be to include cases among the individuals and understand properties as function from worlds to classes of cases. It is no objection to this

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27. Another alternative is a sequence of cases, just those cases of the shape properties which a thing exhibits over time. This may be the best account of the denotation of the nominal in "The shape of the ice statue changed radically as the temperature rose". Compare "The temperature is ninety and rising".

strategy that the cases so far discussed are in one sense abstract, i.e. abstracted from the full-blooded individuals which exhibit them. For they are nonetheless not abstract in either of the senses which would bar them from figuring at the first level of the Particularist hierarchy. They are not classes.<sup>28</sup> They are not universals independently repeatable in many full-blooded individuals. They are spatio-temporally located particulars.

But what of the full-blooded individuals and the ordinary kinds Cat, Dog, Table, Chair, Human Being, Beer Glass, etc. of which they are instances? How are they to be treated by an ontology of cases, sums of cases and classes of cases? If these kinds are to be thought of as functions from worlds to classes of individuals, the individuals in question had better be the full-blooded individuals Fido, Tabby, Mary, this or that particular glass, table or chair. These individuals could be treated simply as mereological sums of the cases they exhibit. However I think there is an important alternative to thinking of ordinary full-blooded individuals just as sums of cases, an alternative which will turn out to allow us to capture the distinction between the essence and the accidents of a full-blooded individual. This is to think of the full-blooded individual as itself a case, a case of a kind. Thus, for example, Fido will be thought of as a case of the kind Dog, Tabby as a case of the kind Cat, Mary as a case of the kind Human Being. If Fido is a case of the kind Dog, which full-blooded individual exhibits this case? The very same individual which exhibits the hairiness of Fido, the four-leggedness of Fido, and Fido's various capacities

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28. Notice that they are not states of affairs. Whereas states of affairs either tenselessly obtain or do not obtain, cases begin and cease to exist at particular times. A state of affairs is a class of an individual, a property and a location and no such class is a color, weighs anything or has a particular shape. Some cases are colored, some have shapes, others have a weight.

to bark, eat, drink, see, hear, etc. -- Fido himself. For the case of the kind Dog which is Fido is not completely distinct from the cases of these various capacities which he exhibits. Indeed it will be argued that they stand to Fido as parts to a whole, at least in the broadest sense of 'part'.

Let us call cases of kinds basic cases. Much of the argument of Chapters 2-4 will be taken up with the question of which things are appropriately treated as complexes (sums of cases not themselves cases) and which are basic cases.

Although in this chapter for purposes of exposition many of my examples of cases of kinds and properties are drawn from a naive inventory of kinds and properties I do not want to imply that scientific investigation cannot get at similarities more fundamental than those registered in the naive inventory, showing thereby the limitations of that inventory for the purpose of providing causal explanations. To the contrary, the real cases will be cases of the kinds and properties which have to be recognized in order to provide a classification of the things and features of things with which it is appropriate to terminate explanation by saying that the explanandum simply cites the essence of the thing to which it refers. Terminating explanation at such a point is appropriate because then requests for further explanation of why the thing cited in the explanandum is that way and remains that way are idle. It could not have been otherwise. Though this form of explanation is not always available it is important not to ignore it when it is available. It is part and parcel of an explanatory theory to postulate certain kinds of things such that things of that kind cannot be supposed to undergo certain changes or be without certain characteristic properties in any of the possible situations recognized by the theory. Instances of those kinds will be the basic cases which the theory recognizes.

For the purposes of this thesis the reality of the kind Space-time region will not be questioned. Particular space-time regions will be treated as basic cases of this kind and not as mere sums of cases of material properties such as being matter-occupied or including a force field of such and such intensity.

There are several advantages to be gained by generalizing the notion of a case to allow for basic cases.<sup>29</sup> One advantage can be immediately displayed. The generalization gives a general grounding for the essence/accident distinction as applied to full-blooded individuals.

In general, by the nature of cases, a case of type F exhibited by some particular could not cease to be of type F. Its remaining F is a condition of its continuing to exist. Fido's capacity to see could not become or change into a capacity to bark, indeed it could not change in any way which involved it ceasing to be a capacity to see. Moreover, it could not have existed as a capacity to bark or anything else other than a capacity to see. Thus if Fido is a case of a certain type, e.g. of the kind Dog, then it is of the nature of Fido not to be able to undergo any change which involved his ceasing to be a dog. He is essentially a dog just as his capacity to see is essentially a capacity to see. So also, if a space-time region is counted as a case of the kind Space-time region, it is essentially a space-time region. It could not change into any other kind of thing. It could not have been any other kind of thing.

Since every individual is fully determinate, for every case there will be some fully determinate or completely specific type of which it is a case.

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29. See Chapter 4 where the notion of a basic case plays a central role in the development of a theory of substances.

Any case can also be correctly called a case of any determinable which its specific nature determines. Thus Fido may be a case of the kind Living Thing, of the kind Animal, of the kind Dog, of the kind Beagle and perhaps most specifically of the kind Beagle of such and such genotype. If this last is the most specific characterization of what it is to be the case that is Fido then it has the best claim to be the essence of Fido. In general then, if the type G (the property of being G or the kind G, depending on what 'G' is) is fully determinate, then being a G is not just an essential property of a case of type G but is also the essence of that case. The essential properties of a case are those that follow from its essence in the sense outlined below [See definition (22), pg. 44]. The accidents of a case are those of its properties which do not follow from its essence.

Thinking of kinds as functions from worlds to classes of basic cases and properties as functions from worlds to classes of non-basic cases is not a mere trick to smuggle in talk about essence and accident. Rather it is a straightforward development of the Particularist idea that we get into a position to think about and refer to kinds and properties as a result of a process of abstraction. Abstracting is considering some but not all of the particular details of the individuals around us. Just as one might offer a class of lines all with the same direction as what is arrived at by abstracting from the location of a line and attending to its direction, the Particularist offers a resemblance class of individuals alike in respect of a single feature as what is arrived at by abstracting from all but one feature of those many individuals. However if the Particularist omits non-basic cases, he overlooks one way of abstracting from the total detail of a full-blooded individual, a way which takes the person doing the abstracting not directly from a full-blooded individual to a property had by that

individual but from a full-blooded individual to what I have called a non-basic case exhibited by that individual. As we shall see, the problems for Particularism cited in Section 1 can be seen as evidence for the claim that the results of the abstractive step from a full-blooded individual to the non-basic cases it exhibits cannot be omitted in any satisfactory Particularist account of individuals and properties.

Things could be left at that and much that follows could be got out by a slightly different route. However a natural development of the ontology of cases suggests itself. This involves attempting to explain what it is for an individual to exhibit a case in terms of the part/whole relation. If this succeeds then the abstractive step from a full-blooded individual to the cases it exhibits will just be the abstractive step from a whole to its parts. (If you are a Particularist who can make little or no sense of the general notion of a part employed in mereology, do not despair. There is something for you at the end of this.)

The theory of the part/whole relation is given by the axioms of mereology. We may take the language of mereology to be that of the theory of impure classes augmented with the primitive predicate 'Oxy', understood as meaning that individuals x and y overlap, i.e. have a part in common, and the predicates

$Pxy$  : x is part of y

$x=y$  : x is identical with y

$Sxu$  : x is the sum of the members of the set u

$Nxz$  : the negate of x is z

defined as follows

D1.  $Pxy \equiv \forall z (Ozx \supset Ozy)$

D2.  $x=y \equiv \forall z (Ozx \equiv Ozy)$

$$D3. \quad Sxu \equiv \forall z [Ozx \equiv \exists y(y \in u \& Ozy)]$$

$$D4. \quad Nxz \equiv \forall y (Pyz \equiv \sim Oyx)$$

The axioms of mereology are

$$A1. \quad \exists y Fy \supset \exists x Sx \{z: Fz\}$$

$$A2. \quad \forall x \forall y [Oxy \equiv \exists z (Pzx \& Pzy)]$$

$$A3. \quad \forall x (\exists z Nxz \equiv \sim \forall y Oyx)$$

Whereas A2 and A3 are relatively straightforward, A1 (an axiom schema where 'F' is an arbitrary predicate) is liable to be mistakenly resisted on the irrelevant ground that the putative sum of two things of a kind, e.g. two people, is not in general a thing of that kind. Thus by way of objection to A1, it is said that arbitrary mereological sums of physical objects are very odd entities, where this seems to mean that they are too gerrymandered and discontinuous to be counted physical objects. This latter is probably a correct observation but not at all at odds with A1 which makes no claims about what kind of things such sums are. D2 and the possibility that distinct things may be spatially coincident, e.g. me and my flesh and bones, indicate that the intended notion of overlap is broader than that of mere spatial overlap, so that the parts that overlapping things have in common can be other than their spatial parts. As Leonard and Goodman themselves emphasize "In our interpretation, ... parts and common parts need not necessarily be spatial parts. Thus in our applications of the calculus to philosophical problems, two concrete entities to be taken as discrete, have not only to be spatially discrete, but also temporally discrete, discrete in color, etc., etc." (my underlining).<sup>30</sup> This is an important observation since many of the objections to applications of mereology turn on what is from the point of view of the intended interpretation of the theory

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30. Leonard and Goodman, *op. cit.*, pp. 46-7.

an overly restricted notion of a part. For example, when it is suggested that a table has no parts other than its top and its legs this is true if something like articulated spatial part is meant by 'part'. But it is false if the intended notion of part is the broader notion employed by the mereologist.

Given this broad notion of a part, the leading idea of an ontology of cases can be explicated. The leading idea is that basic cases have extrinsic or intrinsic properties in virtue of exhibiting cases of those properties. Now we can say that a basic case exhibits a case by overlapping with that case, i.e. by having some part of that case as a part. And this is typical; in general, sums of cases have extrinsic or intrinsic properties by overlapping with cases of those properties. Armed with this mereological account of the leading idea of a theory of cases we can set down the central notions to be employed within the theory by using the resources of the theory of classes and of mereology and by employing as primitives the notion of a basic case, the notion of a non-basic case and a finite number of similarity relations. We shall allow world- and region-relativized variants of  $Oxy$  --

- ' $Oxyr$ ' :  $x$  and  $y$  overlap at spatio-temporal region  $r$ ,  
 i.e.,  $\exists zSz\{x_1 : Px_1x \& Px_1y\}$  exists <sup>within</sup> ~~at~~  <sub>$r$</sub> .  
 ' $Oxyrw$ ' :  $x$  and  $y$  overlap at region  $r$  in  $w$ .

-- and obvious extensions for ' $Pxy$ '. Thus ' $Oxy$ ' could be read as ' $\exists rOxyr@$ ' where '@' denotes the actual world.

We need more than one similarity relation because we wish to recognize less and less specific determinables as well as fully determinate properties and kinds. The similarity relation used to introduce fully determinate properties and kinds is to be 'Match ( $x,y$ )' read as ' $x$  and  $y$  match'. A few remarks about this relation are in order. First, no basic case can match any

non-basic case or vice versa; 'Match (x,y)' holds only between pairs of basic cases or pairs of non-basic cases. Secondly, two things match only in virtue of their qualitative similarity; similarity in respect of location is not to count as qualitative similarity. Thirdly, for two things to match, the respect in which they are qualitatively similar must be a fully determinate respect; they must be as alike as two patches of the same shade or as two beagles of the same genotype. (Qualitative respects will be introduced later as class-theoretic constructions.) Fourthly, because a case of type (property or kind) G is essentially of that type, 'Match (x,y)', unlike the Modal Particularist's 'x as it is in  $w_1$  is similar to y as it is in  $w_2$ ', need incorporate no special trick for making cross-world comparisons. In applying 'Match (x,y)' we need not consider cases as they are in each of the worlds they inhabit. A non-basic case is one qualitative way in every world it inhabits. A basic case may have accidental qualities (which vary from world to world) but it matches other cases of its kind in virtue of its essential qualities, which do not vary from world to world.

Having made these informal remarks we can now give the theory of cases as a series of definitions and postulates. Definitions are marked by '=df',

- (1)  $x$  is a case =df  $x$  is a basic case  $\vee$   $x$  is a non-basic case.
- (2)  $x$  exhibits  $y$  at region  $r$  =df  $x$  is a basic case &  $y$  is a case &  $Oxyr$ .

Every case has a single completely specific nature. Hence

- (3)  $\forall x$  ( $x$  is a basic case  $\supset \exists !K$  ( $K$  is a fully determinate kind &  $x$  is a case of type  $K$ )).
- (4)  $\forall x$  ( $x$  is a non-basic case  $\supset \exists !F$  ( $F$  is a fully determinate property &  $x$  is a case of type  $F$ )).

What cases are there? A basic case for every instance of a kind and a non-basic case for every instance of a property. Thus

(5)  $\forall x (x \text{ is of kind } K \supset x \text{ is a basic case}).$

(6)  $\forall x (x \text{ has property } F \text{ at region } r \equiv \exists y (Oyxr \ \& \ y \text{ is a case of type } F \ \& \ F \text{ is a property})).$

We now define types, properties and kinds and what it is for a case to be a case of a type. In Section 1, in developing the Modal Particularist's account of properties we defined what it was for a function to be a resemblance function united by the similarity relation 'x as it is in  $w_1$  is similar to y as it is in  $w_2$ '.<sup>31</sup> We adapt that idea here. G will be a resemblance function united by the similarity relation  $M(x,y)$  if it satisfies three conditions. First, it is to be a function from worlds to classes of individuals which exist in those worlds. Secondly, for any individuals x and y and worlds  $w_1$  and  $w_2$  then, if  $x \in G(w_1)$  and  $y \in G(w_2)$  then  $M(x,y)$ . Finally, G should be maximal in this respect, i.e. there should be no individual in any world such that it bears  $M(x,y)$  to each member of every class which G assigns to a world but which is not a member of any of these classes. Now we can think of G in the following way. There is the super-resemblance class consisting of all the individuals drawn from any world which are such that they bear  $M(x,y)$  to each other. No such individual is left out. G assigns to each world the class consisting of those members of the super-resemblance class which exist in that world.

Using the notion of a resemblance function united by a relation  $M(x,y)$ , we can define a fully determinate type.

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31. Pg. 11-12 above.

- (7)  $G$  is a fully determinate type  $\stackrel{df}{=} G$  is a resemblance function united by  $\text{Match}(x,y)$ .<sup>32</sup>

In general, properties are resemblance functions from worlds to classes of non-basic cases while kinds are resemblance functions from worlds to classes of basic cases. Thus

- (8)  $F$  is a fully determinate property  $\stackrel{df}{=} F$  is a fully determinate type &  $\forall x \forall w (x \in F(w) \supset x$  is a non-basic case).
- (9)  $K$  is a fully determinate kind  $\stackrel{df}{=} K$  is a fully determinate type &  $\forall x \forall w (x \in K(w) \supset x$  is a basic case).

Intuitively, a (fully determinate) property  $F$  can be thought of as follows. Consider the class of all the cases of the property spread across the worlds. Then  $F$  is a function which assigns to each world the class which consists of all the members of this first class which exist in that world. Similarly with kinds, except that classes of non-basic cases are involved. The functions which are kinds can be thought of as assigning to each world the instances of the kind which exist in that world. The functions which are properties can be thought of as assigning to each world the property instances which exist in that world. But notice a distinctive feature of the construction. A property is not a function which assigns to each world all the things which have the property in that world. For as (6) indicates, an

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32. The right hand side could be spelled out in symbols as

(i)  $\forall w \exists ! u (w \text{ is a world. } \supset u \text{ is a class } \& \langle w, u \rangle \in G \& \forall x (x \in u \supset x \text{ exists in } w)) \& \forall x \exists w \exists u (x \in G \supset x = \langle w, u \rangle \& w \text{ is a world } \& u \text{ is a class})$

(ii)  $\forall x \forall y \forall w_1 \forall w_2 (x \in G(w_1) \& y \in G(w_2) \supset \text{Match}(x,y))$

(iii)  $\sim \exists x \forall w (x \notin G(w) \& \forall y \forall w_1 (y \in G(w_1) \supset \text{Match}(x,y)))$ .

individual can have a property even though it is not a case of that property. The individual can be a basic case or a sum of cases which overlaps a case of that property.

Given this general characterization of fully determinate properties and kinds we are in a position to go on to say which functions correspond to which of those fully determinate properties and kinds we have names for. For example, the property of being Chinese red will be that fully determinate property such that each of the non-basic cases it assigns to any world match a paradigm case of Chinese redness. The kind Beagle of such and such a genotype will be the fully determinate kind such that each of the basic cases it assigns to any world match a paradigm beagle of the genotype. Thus the characterization of properties and kinds suggests how it is that we could be in a position to name a property or kind if we are in a position to demonstrate paradigm cases of the property or kind.

The characterization also allows us to make sense of talk of two things being similar in some fully determinate respect e.g.

- (10) Non-basic cases  $x$  and  $y$  are similar in respect of being Chinese red =<sup>df</sup>  $x$  is a non-basic case &  $y$  is a non-basic case &  $\exists w(x \in \text{Chinese red}(w))$  &  $\exists w_1(y \in \text{Chinese red}(w_1))$ .

In general

- (11) Non-basic cases  $x$  and  $y$  are similar in respect of the fully determinate property  $F$  =<sup>df</sup>  $x$  is a non-basic case &  $y$  is a non-basic case &  $F$  is a fully determinate property &  $\exists w(x \in F(w))$  &  $\exists w_1(y \in F(w_1))$ .

and for cases and sums of cases,

- (12)  $x$  and  $y$  are similar in respect of the fully determinate property  $F$  =<sup>df</sup>  $\exists z \exists x_1 (Oz x \& Ox_1 y \& \text{Non-basic cases } z \text{ and } x_1 \text{ are similar in respect of the fully determinate property } F)$ .

As well as fully determinate properties and kinds there are determinables of less and less specificity. In building up a determinable property (kind) which has fully determinate properties (kinds) as its determinables, the idea is to have the determinable associate with each world a class of cases which is the union of the classes which determinates of that determinable associate with the world. To this end we help ourselves to a series of similarity relations of less and less specificity. We use them to unite the resemblance functions which are to be the less and less determinate properties. Like 'Match(x,y)' they are to hold only between pairs of basic cases or between pairs of non-basic cases. We can think of the looser similarity relations as follows.

$M_1(x,y)$  : x and y are basic cases similar in respect of a single determinable kind of degree 1, i.e. some determinable kind which has as its determinates fully determinate kinds, specifiable using Match(x,y), or x and y are non-basic cases similar in respect of a single determinable property of degree 1, i.e. some determinable property which has as its determinates fully determinate properties, specifiable using Match(x,y).

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$M_n(x,y)$  : x and y are basic cases similar in respect of a single determinable kind of degree n, i.e. some determinable which has as its determinates kinds specifiable using  $M_{n-1}(x,y)$  or x and y are non-basic cases similar in

respect of a single determinable property of degree  $n$ ,  
i.e. some determinable which has as its determinates  
properties specifiable using  $M_{n-1}(x,y)$ .

Built into these looser similarity relations is a constitutive feature of the determinate/determinable distinction as introduced by W. E. Johnson,<sup>33</sup> viz., if an individual falls under a determinable then it has one and only one determinate of that determinable. For example, if a thing has a shape it has a specific shape and only one specific shape -- it must be one of triangular or circular or ..., but it cannot be more than one of these. The other constitutive feature noted by Johnson, viz. that having a determinate entails having its corresponding determinable, will fall out of the construction. [See (18).] Some of the point and consequences of choosing the  $M_i(x,y)$ s as we have will emerge in Section 4 when we return to the problem of imperfect community.

Think of the  $M_i(x,y)$ s as giving out at the point at which we reach such unspecific similarities that the cases of the various determinables generated so far are alike only in respect of the formal or topic-neutral features of having some property or being a member of some kind. To use these likenesses to unify resemblance functions which are then thought of as the property of having some property or the kind consisting of all things of any kind would be a mistake. For there is no such property or kind. The attribution of the alleged property to an individual would not explain the individual's causal powers and operations, nor would the classification of the individual as a member of the alleged kind.

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33. W. E. Johnson, Logic (Cambridge, 1922).

In general

- (13)  $G$  is a determinable type of degree  $i =^{df}$   $G$  is a resemblance function united by  $M_i(x,y)$ .

and so

- (14)  $F$  is a determinable property of degree  $i =^{df}$   $F$  is a determinable type of degree  $i$  &  $\forall x \forall w (x \in F(w) \supset x$  is a non-basic case).
- (15)  $K$  is a determinable kind of degree  $i =^{df}$   $K$  is a determinable type of degree  $i$  &  $\forall x \forall w (x \in K(w) \supset x$  is a basic case).
- (16)  $F$  is a property  $=^{df}$   $F$  is a fully determinate property  $\vee F$  is a determinable property of degree  $1 \vee \dots \vee F$  is a determinable property of degree  $n$ .
- (17)  $K$  is a kind  $=^{df}$   $K$  is a fully determinate kind  $\vee K$  is a determinable kind of degree  $1 \vee \dots \vee K$  is a determinable kind of degree  $n$ .

We can now state the special relation between determinates and determinables (a relation which holds, for example, between Redness and Colored and which the Modal Particularist got wrong).

- (18)  $G$  entails  $H =^{df}$   $((G$  is a property &  $H$  is a property)  $\vee$  ( $G$  is a kind &  $H$  is a kind)) &  $\forall x \forall w (x \in G(w) \supset x \in H(w))$ .

The relation ... entails ... is therefore just the improper ancestral of the relation ... is a determinate of which ... is a determinable.

When we have a case of the property of being Chinese red in some region it does not cohabit that region with a distinct case of the property of being red. No; the case of Chinese red is also properly classified as a case of redness and indeed as a case of any property entailed by its fully determinate nature. Similarly with kinds. Hence

- (19)  $x$  is a case of type  $H =_{df} x$  is a case &  $\exists G$  ( $G$  is a fully determinate type &  $\exists w(x \in G(w))$  &  $G$  entails  $H$ ).

In the case ontology each case is essentially a case of any type of which it is actually a case. The fully determinate type which a case is a case of has a good claim to be the essence of that case. We want to allow that a case has essential properties as well as its essence. For a non-basic case these essential properties will be those properties entailed by its essence in the sense of (18). But the essential properties of a basic case will not be those entailed by its essence in the sense of (18). No properties are so entailed by its essence. We need a relation between kinds and properties which holds just when the property is essential to the kind. When a property is essential to a kind a case of the kind will exhibit a particular case of the property in every world in which the case of the kind exists. Now (2), above, defined 'x exhibits y at region r'. In terms of (2) we can introduce the notion of x exhibiting y in the actual world, i.e.  $\exists r(x$  exhibits y at  $r$ ). But there is a natural generalization of this notion, i.e. x exhibits y in world w. We can now introduce the desired relation between kinds and properties.

- (20)  $G$  implies  $F =_{df} G$  is a kind &  $F$  is a property &  $\forall x \exists y \forall w ((x \in G(w) \supset y \in F(w)) \& x$  exhibits  $y$  in world  $w$ ).

The essence/accident distinction is now available.

- (21)  $G$  is the essence of case  $x =_{df} x$  is a case of type  $G$  &  $G$  is a fully determinate type.
- (22)  $F$  is an essential property of case  $x =_{df} \exists G$  ( $G$  is the essence of case  $x$  &  $F$  is a property & ( $G$  entails  $F \vee G$  implies  $F$ )).

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- (23)  $F$  is an accidental property of case  $x =_{df} \exists r$  ( $x$  has property  $F$  at  $r$  &  $F$  is not an essential property of  $x$ ).

Though not a definition, (6) gives the conditions under which a case  $x$  has a property at a region  $r$ . In general a case or sum of cases has a property in a region by overlapping with a case of that property in that region.

As we shall see in Chapters 4 and 5, the essence/accident distinction cannot be straightforwardly applied to sums of cases which are not themselves cases. But the intrinsic/extrinsic distinction is applicable to cases and mere sums of cases alike. If a case is intrinsic to a case or sum of cases then it is part of that case or sum of cases. If a case is extrinsic to a case or a sum of cases it overlaps with but is not part of that case or sum of cases. Thus

- (24)  $y$  is a case intrinsic to  $x$  at  $r =_{df} y$  is a case &  $P_{yxr}$ .
- (25)  $y$  is a case extrinsic to  $x$  at  $r =_{df} y$  is a case &  $O_{xyr}$  &  $\sim P_{yxr}$ .

This gives the related distinction between intrinsic and extrinsic properties.

- (26)  $F$  is an intrinsic property had by  $x$  in region  $r =_{df} \exists y$  ( $y$  is a case intrinsic to  $x$  at  $r$  &  $y$  is a case of type  $F$  &  $F$  is a property).
- (27)  $F$  is an extrinsic property had by  $x$  in region  $r =_{df} \exists y$  ( $y$  is a case extrinsic to  $x$  at  $r$  &  $y$  is a case of type  $F$  &  $F$  is a property).

This completes the core of a theory of cases. The rest of a theory of cases involves a full account of relations. Some of the work of relations is already done by extrinsic cases but I do not see how to make extrinsic cases do all the work of relations. It is natural to suppose that the central idea

of a theory of relations is that the extension of an n-adic relation at a world is an n-tuple of individuals, i.e. cases and sums of cases. The development of this idea to incorporate relations of variable adicity and cross-world relations involves several complications. So far as I can see none of these is peculiar to the theory of cases. Relations are messy on any theory.

Several Particularists have told me that while they believe in spatial parts and perhaps even temporal parts they think that the notion of part is just being used with a different sense when I say with Leonard and Goodman that e.g., the color of a thing is a part of it or overlaps with it. These Particularists conclude that there is no broad notion of a part of which spatial parts, temporal parts and the various parts I would recognize as cases and which the friend of universals would take to be properties are examples. Rather, by their lights, 'part' is just being used equivocally when I speak of the top of the table as a part of it and its texture as a part of it. This is a standoff. I suggest that neither side could persuade the other without recourse to a clear criterion for the identity of senses. In the absence of such a criterion I want to mention how the theory of cases could be developed independently of any mereological basis so that most of its bounties can be accepted by all Particularists.

In the alternative development of the theory (12) and (24) through (27) are omitted as are the special predicates of mereology 'Oxy', 'Pxy' and their relativizations. We will then take as primitive the notion of a basic case exhibiting a (non-basic) case of a property at a region of space-time. Since arbitrary sums of cases are no longer admitted (6) will be replaced by

(6') Basic case x has property F at region r =<sup>df</sup>  $\exists y$  (x exhibits y at r & y is a case of type F).

Everything else proceeds as before. We can also recover some of the effect of (24) through (27). We can say that intrinsic properties are necessarily shared between duplicates, not so with extrinsic properties. More exactly, a property is intrinsic to an individual at a time just in case it is necessary that if anything duplicates that individual at that time then it has the property. Then a case of a property intrinsic to an individual at a time can be called an intrinsic case. Any non-intrinsic case exhibited by a basic case is an extrinsic case.

#### 4. Cases to the Rescue

I propose that the Particularist include among his initial individuals regions, occupants of regions and undetached parts of these. Once these initial individuals are understood to be basic cases and the non-basic cases which they exhibit, the problems with Particularism cited in Section 1 are quickly solved.

The construction of properties and kinds offered in Section 3 incorporated the insights of Modal Particularism by treating properties and kinds as functions from worlds to classes. The constructions thus avoid the problems of contingent co-extensiveness and unchanging extensions across worlds.

The problem of imperfect community arose for the Modal Particularist because of the nature of his pairwise similarity comparisons between individuals. The similarity relation he was employing was that of cross-world similarity in some respect and the individuals he was comparing were the sorts of things which could be similar in more than one respect. So by considering cross-world similarities in respect of F and G or H and G or F and H, where F, G and H were properties, a function could be cooked up which satisfied the Modal Particularist's definition of a resemblance function but which nonetheless was not a property. That is, it was not in general true that the members of a class assigned to a world by the cooked-up function have a common feature running through them.

The problem does not arise for properties and kinds as constructed on the theory of cases. For the theory of cases implies that if F, G, H ... are properties (kinds) then Boolean combinations of these are not properties (kinds). This is an attractive consequence for a number of

reasons. It not only stops the problem of imperfect community from arising but it also allows a solution to the paradoxes of confirmation. For a universal conditional statement to be projectible and confirmable its antecedent and consequent have to concern properties or kinds. If green, blue, observed and black are properties and raven is a kind then there is no property grue, no property non-black and no kind non-raven. Hence observed green emeralds confirm 'All emeralds are green' but not 'All emeralds are grue'. And a white shoe does not confirm 'All non-blacks are non-ravens'. So it is worth seeing why Boolean combinations of properties (kinds) are not counted properties (kinds) on the theory of cases.

By (4) and (6) each non-basic case has only one fully determinate property. But (19) and (6) tell us that each non-basic case has the determinable properties entailed by its fully determinate property. The similarity relations  $\text{Match}(x,y)$ ,  $M_1(x,y) \dots M_n(x,y)$  were introduced in such a way as to guarantee that at each degree of determinateness a non-basic case has at most one property of that degree of determinateness. So, for example, if Redness, Blueness, Pinkness etc. are determinables of degree 1, any non-basic case of a color property will have at most one of these determinables. But also, any such non-basic case will have at most one of the wider class of determinables of degree 1, i.e. the class including not only the color determinables of degree 1 but also the mass determinables of degree 1 and also the shape determinables of degree 1, etc., etc.. We were able to build such a condition into the  $M_i(x,y)$ s because we were working with non-basic cases which can only be similar in a single respect of any given degree of determinateness. (Non-basic cases have a corresponding feature.

They can only be members of at most one kind of any given degree of determinateness.)

Since properties are resemblance functions united by the  $M_i(x,y)$ s [see (8) and (14)] we can use the features built into the  $M_i(x,y)$ s to work out whether if  $F$ ,  $G$  and  $H$  are properties then non-F, F and G, G or H, etc. are properties. (Hereafter, 'Match(x,y)' is to be understood as ' $M_0(x,y)$ ', one of the  $M_i(x,y)$ s). Suppose  $F$ ,  $G$ ,  $H$  are resemblance functions united by  $M_j(x,y)$ . Then they are determinable properties of degree  $j$ . But surely if there were a property non-F it would be of the same degree of determinateness as  $F$ . So also, if property  $F$  and property  $G$  are both of degree  $j$  then the putative property F and G would be of degree  $j$ . Moreover, the alleged property G or H is just the alleged property non- (non-G and non-H) and so by the previous claims it has the same degree as  $G$  and  $H$  have, i.e. degree  $j$ . But notice that  $M_j(x,y)$  will not unify two resemblance functions of the same degree if those functions (properties) are both had by two or more cases. For then the cases would be similar in more than one respect of degree  $j$  which is impossible given the way  $M_j(x,y)$  was introduced. So if  $G$  is a property and  $F$  is another property and they are both of degree  $j$  then there is no property non-F. For if non-F were a property then it would be of degree  $j$  and the cases of  $G$  would also be cases of non-F and so would be alike in two respects of degree  $j$ . Similarly if G or H were a property then among the cases of this property would be cases of  $G$  and such cases would be alike in two respects of degree  $j$ . So also if F and G were a property then there would be cases of it and those cases would not only be alike in being F and G but also in being  $F$ . Again we have the result that cases would be alike in more than one respect of degree

$j$ , which is impossible. So on the theory of cases, Boolean combinations of properties of degree  $j$  are not properties. (One exception is left over by the reasoning above. If  $F$  is the only uncompounded property of degree  $j$  then there seems no objection to allowing non- $F$  as a property so long as  $F$  or non- $F$  is not allowed. But there is no reason to think that this situation arises at any degree.)

Mutatis mutandis for kinds; (3) tells us that each basic case is a case of one and only one fully determinate kind and the  $M_i(x,y)$ s are introduced so that in general each basic case will be a case of at most one kind of each degree.

What about Boolean combinations of properties drawn from various degrees? I claim that such compounds would be as unspecific as their least specific components, so that in general the degree of some putative property of the form ( $F_1$  and  $F_2$  and ...) or ( $G_1$  and  $G_2$  ...) or ... would be the maximal degree of [degree ( $F_1$ ), degree ( $F_2$ ) ... degree ( $G_1$ ), degree ( $G_2$ ) ...]. But then, by previous argument, a conjunction of the properties,  $F_1 \dots F_n$ , will not be a property. For suppose that degree ( $F_{n-1}$ ) =  $k$  is the maximal degree of  $F_1 \dots F_n$ . Then if  $F_1$  and  $F_2$  and ... and  $F_n$  were a property, cases of this property would be alike in this respect and also in respect of  $F_{n-1}$ . So those cases would be alike in two respects of degree  $k$ , which is impossible. Similarly, a disjunction of the properties  $F_1 \dots F_n$  will not be a property. For if degree ( $F_{n-1}$ ) =  $k$  is the maximal degree of  $F_1 \dots F_n$  then cases of  $F_{n-1}$  would be alike in this respect and also in respect of  $F_1$  or  $F_2$  ... or  $F_n$ . So these cases would be alike in two respects of degree  $k$  which is impossible thanks to the way the  $M_i(x,y)$ s were introduced. (Mutatis

mutandis for kinds). So in general, on the theory of cases, Boolean combinations of properties (kinds) are not properties (kinds).

The problem of exhaustion arises under the following conditions:  $F$  is a property or kind, so also is  $H$ . However the functions  $f$  and  $h$  with which it is plausible to identify  $F$  and  $H$  respectively are such that (i) for any world  $w$  the class which  $f$  assigns to  $w$  is a sub-class of the class which  $h$  assigns to  $w$  and (ii) for some world  $w^1$  the class  $C_f$  which  $f$  assigns to  $w^1$  is a proper sub-class of the class  $C_h$  which  $h$  assigns to  $w^1$ . Moreover (iii) each of the members of  $C_h - C_f$  stand in the similarity relation  $R$  to each of the members of each class which  $f$  assigns to the worlds, where  $R$  is the relation used in stating the similarity constraint on  $f$  and  $h$ . The example presented in Section 1 was one in which  $F$  was the kind Human Being and  $H$  was the property Risibility. Conditions (i) and (ii) held because we were allowing only full-blooded individuals, e.g. humans and hyenas, as members of the classes assigned to worlds. Condition (iii) held because we were only working with a single similarity relation in defining kinds and properties.

We can quickly verify that the problem of exhaustion does not arise given the definitions of kinds and properties provided in Section 3. Definition (8) and claim (4) together imply that any two fully determinate properties will assign disjoint classes of non-basic cases to any world to which either assigns a non-empty class. Thus, a fully determinate property cannot exhaust another fully determinate property since conditions (i) and (ii) will not hold. So also for fully determinate kinds; claim (3) and definition (9) of Section 3 together imply that any two fully determinate kinds will assign disjoint classes

of basic cases to any world to which either assigns a non-empty class. Furthermore, no kind will exhaust a property, nor vice versa. For a kind will assign a class of basic cases to any given world while a property will assign a class of non-basic cases to that world. The only situation where conditions (i) and (ii) could be satisfied is one in which F entails H in the sense of definition (18) and  $F \neq H$ . But then F and H will not be equally determinate properties or kinds, i.e. either F will be fully determinate and H a determinable of some degree or both F and H will be determinables of some degree with F of a lower degree than H. Hence different similarity relations will be used in the definitions of F and H so that condition (iii) will not be satisfied.

Thirdly, because properties are identified with functions from worlds to classes of <sup>non-</sup>basic cases, distinct capacities necessarily instantiated in the same full-blooded individuals can be distinguished. Socrates' capacity for belief, a case of the property of having the capacity for belief, is distinct from Socrates' capacity to desire, at least so long as there are things for which the one is causally responsible and for which the other is not. For cases are to be individuated by their causal roles.

Fourthly, once we adopt a theory of cases there is no problem of finding a paraphrase for "Necessarily red is a color" which says more than "It is necessary that if anything is red it is colored". Every case of Being red is a case of Being colored. And although it is necessary that every case of Being red is extended (or located in space-time) it is necessarily false that every case of Being red is a case of Being extended (or Being located in space-time). Being red

entails Being colored in the sense of definition (18); not so with Being red and Being extended.

The ontology of cases also provides a way of introducing worlds as classes at a hierarchical level lower than that at which properties and kinds as functions from worlds to classes first appear. The intuitive idea of a possible world to be represented by classes of a certain sort is that of a possible distribution of non-regional basic cases, non-basic cases and sums of these over a totality of space-time regions. So the classes which will be identified with worlds will be classes or ordered pairs of regions and cases or sums of cases such that the sum of the regions represents a possible space-time manifold and the placing of the cases or sums at the regions represents a possible distribution of characteristics across the manifold.<sup>34</sup> Of course, this construction of worlds will not give us any worlds in which there are instances of completely alien properties or kinds, i.e. properties or kinds which have no instances in our world. However we do get all the worlds we need to go on to introduce all instantiated kinds and properties as functions from worlds to classes of cases. Indeed, one might wonder if there really are irresistible grounds for recognizing uninstantiated properties and kinds and specific possibilities which cannot be patched together by re-arranging actual cases. If we wished, some worlds with alien possibilities could be artificially represented by including in the classes of pairs of regions and cases or sums of cases pairs of

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34. I take possibility as primitive. The only way I know of to avoid such a primitive is to take worlds as large individuals as D. Lewis does.

regions and abstract markers (e.g. pure classes) indicating that some alien case is to be thought of as located at the region.

Sixthly, adopting an ontology of cases also allows us to maintain that the characteristics of individuals are directly efficacious. In Section I the Particularist was charged with making the characteristics of things classes off in abstract heaven thus leaving it mysterious how those characteristics could enter directly into causal relations. But now we see that 'characteristic' is at worst merely ambiguous for the Particularist who admits cases. Properties are in abstract heaven. No matter, ordinary individuals construed as basic cases or sums of non-basic cases have these properties by exhibiting or overlapping with cases of those properties. Cases have at least as much claim as properties to be called the characteristics of individuals. They are the causally potent parts of individual things, they include a thing's mass, size, shape, composing matter, dispositions etc. On the theory of cases, it is the weight of the dumbbell -- a case of a certain weight magnitude exhibited by the dumbbell -- and not the dumbbell, which makes the dumbbell hard to lift.

I conclude that cases do all the respectable work that universals do. More, they provide a wide base for the essence/accident distinction. And an ontology of cases avoids the major pitfall of an ontology of particulars and universals. It does not imply that each individual capable of being duplicated has some utterly characterless part.

For the purposes of this thesis I shall adopt an ontology of cases, basic and non-basic. One issue which dominates the chapters that follow concerns which things other than spatio-temporal regions are basic

cases. I call non-regional basic cases substances for the reasons given in chapter 4. From the naive view which knows little of the prospects of microphysical reduction, all instances of non-regional nominal kinds -- the dogs, the cups, the tables, the pianos etc. look like good candidates to be substances. Alas, it turns out that naivete must make some concessions to reductionism. Instances of many nominal kinds turn out not to be substances but complexes -- certain sorts of sums of cases not themselves cases (vide Chapter 2). However, as we shall see, there are good reasons to resist the reductionist view for fundamental particles, for living things and for ourselves in particular (Chapters 2-5). The upshot is that among the individuals are regions, substances and complexes. Cases will loom large in the construction of complexes and the characterization of substances.

## Chapter 2 -- Complexes

### 1. Persistence

Space-time points, degenerate sorts of space-time regions, are instantaneous and necessarily do not persist, i.e. exist at successive moments. The question arises for the things which do persist or could persist whether or not they all persist or would persist in the same manner. A non-instantaneous space-time region is a paradigm of one sort of persister. Such regions perdure, i.e. persist through an interval of time by having a different temporal part or slice at each sub-interval of the interval. The slices of regions will simply be temporally smaller regions. Any so-called Complex View<sup>1</sup> of the "identity" over time of ordinary objects which takes this relation to consist in the holding of relations of qualitative similarity, continuity and causal dependence between distinct but gen-identical stages, phases, temporal parts, time-slices or things-at-times thereby represents the four-dimensional entities aggregated out of these as perduring through time.<sup>2</sup>

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1. The term "Complex View" is appropriated from D. Parfit, "Later Selves and Moral Principles" in Philosophy and Personal Relations, A. Montefiore (ed.), (Oxford University Press, 1973). Advocates of the view include R. Carnap, N. Goodman, D. Parfit, J. Perry, D. Lewis, R. Nozick and W. V. Quine. For Quine's version see "Identity, Ostension and Hypostasis" in From a Logical Point of View (Harper, New York, 1963) and "Worlds Away", The Journal of Philosophy, 73, 1976. References to the other proponents of the view are given below.

2. Thus R. Carnap in Introduction to Symbolic Logic and its Applications (New York, 1958), p. 158, says "A thing occupies a region in the four-dimensional space-time continuum. A given thing at a given instant of time is, so to speak, a cross-section of the whole space-time region occupied by the thing. It is called a slice of the thing. ... We conceive of a thing as the temporal series of its slices." and N. Goodman in The Structure of Appearance, p. 94, says "When we consider the table at different moments, we are sometimes told that we must inquire into what it is that persists through these temporally different cross-sections. The simple answer is that, as with the leg and the top, the unity overlies rather than underlies the diverse elements: These cross-sections, though they happen to be temporally rather than spatially less extensive than the whole object in question, nevertheless

There is another way of existing at successive times, often completely neglected in discussions of identity over time. For this I reserve the term 'enduring'.<sup>3</sup> To endure through an interval of time is to be wholly present at each sub-interval of the interval in question. All of the thing, in a sense to be explained, can exist at each sub-interval. So no enduring thing has temporal parts, for these would be bound to the temporal intervals which they occupy and so would not exist earlier or later. The history of an enduring thing does have temporal parts, but the history is not the thing. Similarly with the total position of an enduring thing -- the region of space-time occupied by the enduring thing over its lifetime -- it has temporal parts but it is no part of the enduring thing. Whereas perduring is a matter of the holding of a gen-identity relation (i.e. the relation of being a temporal part of the same thing as ... is a temporal part) between temporal parts, enduring is not; enduring things exist at successive times without having temporal parts to be gen-identical. In the terminology of Chapter 1, an enduring thing is repeatable at each of the space-time regions at which it exists. But it is not independently repeatable. If it exists at two regions then its existence in one of these regions is part of the explanation of its existence in the other. I think that a thing cannot be accidentally a perdurer rather than an

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2. Ctd. stand to it in the same relation of element to a larger totality. And as before, because these elements have certain characteristics and are related in certain ways, the totality they make up is what we call a thing, and more specifically a table."

3. D. M. Armstrong in "Identity Through Time" in P. Van Inwagen (ed.), Time and Cause (Dordrecht, Riedel, 1980) calls the view that a class of individuals endure through time the Identity view of those individuals. The motivating analogy for Armstrong is between enduring individuals wholly present from one moment to the next and universals wholly present in many individuals. Armstrong rejects the Identity view for persisting individuals. The Identity view of persons was held by Bishop Butler and by Thomas Reid. See the first appendix to Butler's The Analogy of Religion and Chapter 4 of "Of Memory" in Reid's Essays on the Intellectual Powers of Man.

endurer nor vice versa. As we shall see, the way a thing persists through time is one of the most fundamental things about it. So I think we should say that a perdurer can persist and necessarily perdures if it persists. An endurer can persist and necessarily endures if it persists.

To get a feel for the distinction first consider this example which has all the ladder-to-be-kicked-away features of Aristotle's brazen sphere. When a current of a certain strength builds up on two separated electrodes encased in a glass tube containing inert gas a bright electric flash leaps across the gap. Suppose the current is alternating very rapidly so that distinct flashes leap back and forth every sixtieth of a second. The effect is an apparently continuous beam of light between the electrodes, a beam which lasts as long as the current is on. The persisting beam is just an aggregate of relatively quick flashes none of which persists anywhere as long as the beam. The beam exists at each interval of one sixtieth of a second just in virtue of there being a flash between the electrodes during the interval. There is nothing more to the beam than a succession of such flashes. It is just the sum or aggregate of discharges between the electrodes. The beam perdures.

Contrast the electrodes, naively considered. At each of the successive moments when one flash replaces another the electrodes are present in a way in which the beam is not. Naively considered, they seem not to be temporal aggregates of relatively quick entities.

The hypothesis to be entertained is that the electrodes, properly considered, are not very different from the beam. They too, along with the tube and the inert gas, may be no more than temporal aggregates of relatively quick goings on. Extending this idea to cover all objects leads us to the paradoxical thought that there may be no enduring stage on which the fleeting

appearances perform, no enduring props whose continuously present natures account for what goes on -- the complete Humean nightmare, a world without substance.

There is a useful parallel between the problem of persistence through time and the so-called problem of cross-world identity. The two well-known theories of modal persistence -- accounts of what it is for an individual to figure in various possible situations -- closely correspond to the two theories of temporal persistence just outlined.<sup>4</sup> To make the parallel explicit let us say that an individual modally endures just in case that individual is wholly present in each of the possible worlds in which it is implicated so that cross-world identifications involving that individual can be understood as strict identity claims; claims which cannot be reduced to, do not hold solely in virtue of, relations between things which have all their parts existing in a particular world (world-bound individuals). Modally perduring individuals, on the other hand, figure in various distinct possible worlds in virtue of having a distinct world-bound part or world slice in each. The world-bound slices which sum together to make up a modally perduring individual are plausibly taken to be those which stand in some appropriate counterpart relation of similarity-in-certain-respects. Thus, the truth-maker for a cross-world identification involving a modally perduring individual will consist in the holding of such a counterpart relation between world-bound individuals.

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4. Cf. S. Kripke, "Semantical Considerations in Modal Logic", Acta Philosophica Fennica, 16, 1963, and Naming and Necessity (Harvard University Press, 1980). D. Lewis, "Counterpart Theory and Quantified Modal Logic", The Journal of Philosophy, 65, 1968, and the postscript to this in his Collected Papers, Vol. 1 (Oxford University Press, 1983). For a general discussion of the issue see A. Plantinga, "Transworld Identity or World-Bound Individuals", in M. J. Loux (ed.), The Possible and the Actual (Cornell, 1979) and D. Kaplan, "Transworld Heirlines" in the same volume.

Notice that the difference between enduring modally and perduring modally cannot be unambiguously stated simply by saying that when an individual endures across the worlds the very same individual exists in each of these worlds. For this is as true for modally perduring individuals. What must be said is that when an individual endures across the worlds it, the very same individual, exists in each of these worlds but without having modal parts, i.e. without being a sum of world-bound slices. Similarly with temporal enduring, if an individual endures through time then that very individual exists at successive times without having temporal parts.

The issues over the nature of persistence, whether temporal or modal, are associated with questions of reduction or supervenience. Do facts concerning the sameness or difference of individuals over time just consist in facts concerning the holding of relations of causal dependence, continuity and qualitative similarity between time-slices or time-bound individuals? Do facts concerning the sameness or difference of individuals across worlds just consist in facts concerning the holding of relations of qualitative similarity in context and content between world-slices or world-bound individuals?<sup>5</sup>

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5. There is a slight problem with formulating the issues in this way. There is a possible position to the effect that although individuals perdure through time, the relation of gen-identity between the stages which taken together constitute a perduring individual is transcendent in that its holding between two stages does not supervene on the holding of relations of continuity, causal dependence and similarity between those stages. I find it hard to understand why anyone would hold such a view. It seems to imply that although in the actual world a particular table is constituted by a succession of table slices such that each non-initial stage is continuous with, similar to and causally dependent upon the immediately preceding stage it is nonetheless possible that the same succession of table stages should exist with the same causal and qualitative relations holding between them and yet not all be stages of the same table because various gen-identity relations just fail to hold.

I suppress further discussion of this position and of its modal analog here. If further argument against the position is desired see the very end of this chapter where a general objection is pressed against theories of temporal perduring, an objection which would also apply to a theory which took the

These issues of reduction or supervenience are not semantic issues, though settling them may well imply something about the correct semantics for modal and tensed discourse. Nor are these issues settled just by adopting or denying the view that non-present times and non-actual worlds are concrete particulars.

The distinctness of the issue of the nature of persistence from pure semantical questions and questions about the nature of times and worlds is obscured by the fact that theories of perdurance and endurance usually come packaged with semantical accounts of tensed and modal discourse and with firm views on the nature of times and worlds. It may be salutary then to investigate how far we can get in laying out the alternative views on the nature of persistence without making assumptions about semantics or taking sides on the question as to whether worlds and times are concrete or abstract entities.

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5. Ctd. gen-identity relation as primitive. The objection is that on the theory, gross continuity is utterly mysterious.

## 2. The Theory of Perduring

David Lewis's Counterpart Theory when wedded to a little mereology gives a theory of modal perduring. Although Lewis's counterpart theoretic semantics for modal discourse takes world-bound entities as the subjects of ordinary modal predication, nothing in the postulates of the theory implies this. For all the postulates of the theory require, the subjects of ordinary modal predications, rather than being counterpart related world-bound individuals, could be hydras. Hydras, which raise their heads in many worlds, may be introduced by way of the counterpart relation. Call  $x$  a world-slice of  $y$  if  $x$  is a world-bound individual, i.e. is entirely and only within one world, is part of  $y$  and is not a proper part of any world-bound individual which is part of  $y$ . Then  $y$  is a hydra if any two world-slices of  $y$  are counterparts and  $y$  is maximal in this respect, i.e. not a proper part of any individual any two world slices of which are counterparts. Besides a little fiddle with counting, all that is required to make Hydra Theory do parallel semantic work to that done by Counterpart Theory is to construe ordinary modal predication as about the hydras. Thus "Adam could have been a woman" might go over as "Some hydra which has Adam as a world-slice has a woman as a world-slice".

If the postulates of Counterpart Theory hold true in some domain of counterpart related world-bound entities then they will hold true in an extension of that domain got by adding all the mereological sums of those world-bound entities, hydras amongst them. The postulates are

- P1 :  $\forall x \forall y (Ixy \supset \forall w Wy)$   
Nothing is wholly in anything except a world.
- P2 :  $\forall x \forall y \forall z (Ixy \ \& \ Ixz \supset y = z)$   
Nothing is wholly in two worlds.
- P3 :  $\forall x \forall y (Cxy \supset \exists z Ixz)$   
Whatever is a counterpart is wholly within a world.

- P4 :  $\forall x \forall y (Cxy \supset \exists z Iyz)$   
 Whatever has a counterpart is wholly within a world.
- P5 :  $\forall x \forall y \forall z (Ixy \ \& \ Izy \ \& \ Cxz \ \supset \ x = z)$   
 Nothing in a world is a counterpart of anything else in its world.
- P6 :  $\forall x \forall y (Ixy \supset Cxx)$   
 Anything wholly in a world is a counterpart of itself.
- P7 :  $\exists x [Wx \ \& \ \forall y (Iyx \equiv Ax)]$   
 Some world contains all and only the actual world-bound things.
- P8 :  $\exists x Ax$   
 Something is actual.

The primitives of the theory are to be understood as follows: 'Wx' as x is a world, 'Ax' as x is actual, 'Ixy' as x exists wholly within y and 'Cxy' as x is a counterpart of y.

To add enough mereology to have a theory of modal perduring we need only arm ourselves with the primitive 'Oxy' understood as x overlaps y and the definition D1-D4 and axioms A1-A3 of Chapter 1.

We may now define the notion of a hydra within the theory.

D5  $WSxy = Pxy \ \& \ \exists z Ixz \ \& \ \sim \exists x_1 (Pxx_1 \ \& \ \sim Px_1x \ \& \ Px_1y \ \& \ \exists y_1 Ix_1y_1)$   
 x is a world-slice of y iff x is a world-bound part of y and nothing world-bound which has x as a proper part is part of y.

D6  $H'x = \forall y \forall z (WSyx \ \& \ WSzx \ \supset \ Cyz \vee \ Czy)$

D7  $Hx = H'x \ \& \ \sim \exists y (H'y \ \& \ Pxy \ \& \ \sim Pyx)$

x is a hydra just in case any two of its world-slices are counterparts and x is maximal in this respect.

Since a hydra is just a certain sort of sum of world-bound counterparts, the existence of counterparts and A1 guarantee the existence of hydra.

We now have a theory of modally perduring entities and their world-bound parts. There is a nice question as to whether the actualist

who believes only in actual things has enough resources among his initial individuals and their myriad sums to provide "other-worldly" counterparts and so hydra to back any plausible modal claim. But this would take us too far afield. Our main interest in Hydra Theory is as a modal theory analogous to the theory of temporal perduring.

The analogy in question is a very strong one. P1 through P8 and D5, D6 and D7 admit of a simple reinterpretation on which they along with D1-D4 and A1-A3 constitute a theory of temporal perduring. Understand

'Wx' as x is a time

'Cxy' as x is gen-identical with y

'Ixy' as x exists wholly within time y

'Ax' as x exists wholly at the present time

D5 is understood as defining 'x is a time-slice of y'. Any domain rich enough to satisfy the postulates thus reinterpreted and the axioms of mereology will contain four-dimensional mereological sums of time-slices. Now the leading idea of a theory of temporal perduring can be stated. Among this teeming mass of mereological sums we may distinguish a class of ordinary persisting individuals. This is done by bringing to bear the relations relevant in the persistence of ordinary individuals — qualitative similarity, continuity and counterfactual dependence. In terms of a mix of such relations it is possible to state necessary and sufficient conditions for the application of the gen-identity predicate 'x is a time slice gen-identical with the time-slice y'. Among the vast array of mereological sums of time-slices the ordinary persisting individuals are the complexes, where a complex is a sum of time-slices which is such that (i) any two of its time-slices are gen-identical and (ii) it is not a proper part of any sum of slices of which (i) is true. Thus,

reinterpreting 'Hx' as x is a complex, D6 and D7 can be taken over into the theory of temporal perduring.<sup>6</sup> Call the postulates P1-P8 and D5, D6 and D7 all on their temporal interpretation along with the axioms and definitions of mereology the Theory of Complexes. The Theory of Complexes may be taken as a general statement of the view that persisting things perdure, and in particular that ordinary persisting things -- tables, chairs, atoms, people, etc. are complexes. In trying to remain neutral between various specific versions of the Complex View, little has been said about the formal and material features of the gen-identity relation. In particular the weightings of and sorts of continuity, similarity and counterfactual dependence between slices which are relevant to gen-identity have not been specified.<sup>7</sup> Nor has it been settled whether the gen-identity relation is to be transitive. (This will depend on what is to be said about fission and fusion.) Nor has the nature of the time-bound slices been specified.

In a Phenomenalist scheme time-slices could be taken to be bundles of impressions or as I would say, sums of cases of phenomenalistic properties like being a red quale, being a shape quale, etc.. However, perhaps with the sometime exception of Goodman and Carnap, contemporary advocates of the

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6. It is worth making two remarks about disanalogies. Whereas the counterpart relation of comparative cross-world similarity in certain respects is not symmetrical, the relation of gen-identity is, so that the second disjunct of 'Cyz v Czy' in D6 is redundant when D6 is given its temporal interpretation.

Secondly, if one believes in the possibility of the sort of time travel which results in a persisting thing being in two places at the same time one should drop P5 from the theory of temporal perduring.

7. For discussions of the relative weightings see E. Hirsch, The Concept of Identity (Oxford University Press, 1982), Chapters 1-3, 6 and 7. R. Nozick has something to say about the relative importance of the various relations factored into the personal gen-identity relation in Philosophical Explanations (Harvard, 1981), Chapter 1.

view that persisting things perdure have supposed that the Humean nightmare is more believable if time-slices are taken to be or include mind-independent physicalistic entities. However a general view about the nature of persisting things should not depend for its formulation on the truth of Physicalism.

The problem facing the Complex theorist in introducing time-slices is to find some objective, mind-independent replacement for the Phenomenalist's bundle of impressions, something which has a claim to exhaust the character of an individual at a time. Certain sums of non-basic cases fit the bill very nicely. The idea to be captured is the idea that when a four-dimensional perduring complex persists through a time interval  $t$  its character at that time is encompassed within the region  $pt$  which it occupies (where  $p$  is the place the complex is at during  $t$ ). Now various non-basic cases will exist at  $pt$ . Some of these will be cases exhibited by  $pt$ . Some of these cases and still others would have existed at the region  $pt$  whether or not the complex occupied it. Other cases which exist at the region exist there just because the complex occupies the region. We want a concrete objective representative of this last class of non-basic cases to be the time-slice of the complex at the region. Let us say then that the  $t$  time-slice of a complex of nominal kind  $K$  which exists at place  $p$  during  $t$  is the sum of all non-basic cases which exist in the region  $pt$  in virtue of that region's being occupied by the complexes of kind  $K$  which occupy it. Intuitively, this is the sum of all non-basic cases which actually exist at  $pt$  minus the sum of all non-basic cases which would have existed at  $pt$  even if  $pt$  were occupied by no  $K$ . The definition allows for many  $K$ s co-occupying a region in order to leave open the

possibility that the Complex theorist will take a certain position on fission, fusion or extreme longevity which involves this.<sup>8</sup>

Two remarks about things omitted from time-slices: first, the region  $\rho t$  is not summed into a time-slice. This is because the region is extrinsic to the slice. Consider two slices which are perfect duplicates of each other. They exist in different regions but have all their intrinsics in common. Secondly, no mention is made of basic cases of non-regional kinds. An unqualified Complex View will deny that there are such cases. For as Chapter 4 demonstrates, if there are basic cases of non-regional kinds (substances) then their persisting through time is not simply a matter of the holding of patterns of continuity, counterfactual dependence and similarity between things-at-times. This latter is the denial of the fundamental tenet of the Complex View.

Notice that the notion of a K is used in the very definition of a time-slice of a K. This represents a certain pessimism on my part which may be unwarranted. The pessimistic thought is that there may be no useful, correct specification of the so-called spatial unity conditions on Ks for any non-regional kind K. That is, when one considers the variety of ways in which the boundaries of K may be fuzzy edged, included within or juxtaposed with the boundaries of other Ks, and also the variety of other reasons which might make those boundaries arguable, one suspects that no set of necessary and sufficient conditions not using the notion of a K and

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8. For a version of the Complex View of persons which allows for such co-occupancy see D. Lewis, "Survival and Identity" in The Identities of Persons, ed. Amelie O. Rorty (Berkeley: University of California Press, 1976). The issue of fission is discussed in detail in Chapter 3, Sections 1 and 2 below.

stating when some case exhibited by a region is part of a time-slice of a K will have the same extension, anti-extension and areas of vagueness as our concept of the spatial boundaries of a K. This would be a problem for the Complex View of Ks if that view were offered as an analytic elimination of the notion of a persisting K in favor of other notions deemed more respectable. However, the Complex View of Ks is best offered as an a posteriori reduction made plausible by investigation into the nature of persisting Ks. As such, it is the claim that K's perdure, i.e. that there is nothing more to their persisting through time than the holding of patterns of similarity, continuity and counterfactual dependence between time-slices of Ks.

In giving expression to this claim the Complex theorist needs not only to specify what a time-slice of a K is but also to characterize the content and formal features of the gen-identity relation which ties together time-slices of Ks into four-dimensional perduring Ks. So far as the content of the gen-identity relation goes, the Complex theorist can be rather cagey, saying that two K-slices are slices of a persisting K only if there is enough continuity and counterfactual dependence between the slices.<sup>9</sup>

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9. Hereafter I assume that in so far as qualitative similarity is important it is incorporated into the requirement of continuity.

So far as counterfactual dependence goes, we can adapt Lewis's account of counterfactual dependence between events given in "Causation", The Journal of Philosophy, 70, 1973.

Case  $C_2$  is counterfactually dependent on case  $C_1$  iff if  $C_1$  had not existed then  $C_2$  would not have existed or the probability of  $C_2$  existing would have been lower than it actually was.

Counterfactual dependence between two stages is an additive weighting of the various particular counterfactual dependencies between the cases which make them up.

How much is enough and what trade offs as between various sorts (e.g. mental or physical) of continuity and dependence are to be allowed? The Complex theorist should say that these specific details are to be worked out by bringing our intuitions about when Ks persist, intuitions gleaned from normal and abnormal situations, into reflective equilibrium. Rather than bolt his theory down right from the start, the theorist should first make his general theory swing with our sometimes vacillating intuitions and then go on to offer his account of just which of the equilibria compatible with the general theory he takes to be best or as good as any other.

Similar remarks apply to the formal features of the gen-identity relation for Ks. On any account the relation is reflexive and symmetric. But in order to settle whether it is transitive, a specific stance has to be taken on the mooted cases of fission and fusion of Ks. The Complex theorist may well say that such cases are puzzling and that no special theory is especially distinguished by settling them in a way that is least at odds with our intuitions.

It is characteristic of a Complex theorist to maintain that in such a situation there is no relevant fact over and above the facts about the special relations between K-slices and the facts about what the conventions associated with our concept of a persisting K determine or fail to determine. Once the facts about the special relations between K-slices and the relevant conventions in applying the concept of the same K over time are laid out, all the facts relevant to determining the temporal extent of persisting Ks have been specified.<sup>10</sup> Thus the Complex View of some

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10. Cf. D. Parfit, "Personal Identity", Philosophical Review, 80, 1971.

nominal kind can seem very attractive if we are inclined to say of things of that kind that their persisting through a period of time is sometimes a matter of degree or sometimes a matter of making more determinate conventions which presently fall short of settling questions of persistence for Ks. On the Complex View, whether or not a particular K persists through a period of time can be a matter of degree if the special relations of continuity and causal dependence holding between K-slices before and during that interval hold to degrees less than, but not significantly less than, the usual degree required for the persistence of Ks. Moreover, on the Complex View, our conventions can fail to generate non-collusive agreement about whether a K has persisted through an interval even when all the facts about the special relations between K-slices are known.

Many of the puzzle cases of identity over time which are discussed appear to be examples of these sorts. When a wooden ship is disassembled by first taking away one plank and burning it, next taking away two planks and burning them, next three planks, etc., eventually the ship ceases to exist. As to just when it ceased to exist, i.e. as to just when there was no longer a ship-slice which stood in the special relations of continuity and dependence to earlier ship-slices which are indisputably part of the persisting ship, it is difficult to believe that there is a precise answer waiting to be discovered. For here it seems that our conventions do not and probably should not give us a sharp answer. The facts of the example seem just to involve the gradual wearing out of the relations that matter.

### 3. Limitations of the Complex View

The limited scope of the Complex View can be made evident even when it is cast in the general form outlined in Section 2. On the Complex View the facts about which things persist through which periods of time and exist at various places are determined by or supervene upon the facts about the distribution of property instances or cases across space-time and the relations of continuity and counterfactual dependence amongst these. This is the sense in which the Complex View is a reductionist view. Facts about persistence or identity over time are nothing more than facts about the special relations among slices (and so among non-basic cases).

The way to refute such a reductionist or supervenience claim is to show that it wrongly collapses distinct possibilities. To show that the Complex View does this involves finding a pair of possible situations in both of which the same facts about the holding of special relations among slices obtain, even although different facts about identity through time hold.

If the Complex theorist had omitted the condition of counterfactual dependence between slices then many such examples would be ready to hand. For example suppose that two mischievous demons, the Creator and the Destroyer, have a fascination for billiard balls. The Creator is liable to create a billiard ball just about anywhere, the Destroyer obliterates existing balls at random. By accident the Creator just happens to create a billiard ball at a spot where the Destroyer has just destroyed one. As it happens, the created ball is a duplicate of the destroyed ball. As a result there is just the sort of continuity between billiard ball slices which would have obtained if the original billiard ball had been left undisturbed. But in the one situation we

have replacement, in the other persistence. By the lights of several Complex theorists<sup>11</sup> what distinguishes the two situations is that in the first situation there is not the right pattern of counterfactual dependence between earlier and later billiard ball-slices for this to be counted as a situation in which a billiard ball persists.

Further examples which could be taken to show the importance of the right pattern of counterfactual dependence between slices have been offered by D. M. Armstrong and Saul Kripke.<sup>12</sup> Consider two worlds alike in that each contains a sphere of homogeneous (non-particulate) matter. In the first world the sphere is rotating at a constant velocity (with respect to absolute space or some relationist surrogate such as the fixed stars). In the second world an exactly similar sphere is stationary. Both worlds exhibit exactly similar local patterns of material continuity. That is, the distribution of material properties across the parts of the space-time manifolds where the spheres are located are exactly alike. And unless something like Mach's principle applies to homogeneous matter, so that local differences in forces such as the difference between zero and non-zero centrifugal force must be reflected in differences in the global distributions of matter, the two worlds could be exactly alike in the distribution of material properties across their respective space-time manifolds.<sup>13</sup> At very least, the

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11. S. Shoemaker, "Identity, Properties and Causality", Studies in Metaphysics, Midwest Studies in Philosophy, Vol. 4, edited by Peter A. French, Theodore E. Uehling Jr. and Howard K. Wettstein (Minneapolis, 1979). D. M. Armstrong, "Identity Through Time", op. cit.. D. Robinson, "Re-identifying Matter", Philosophical Review, 81, 1982.

12. Armstrong, ibid. and Kripke in conversation and in lectures given in Princeton in 1978.

13. For a discussion of the Machian response to this kind of example see H. Reichenbach, The Philosophy of Space and Time (Dover, 1958), pp. 213-218.

example shows that a fact about whether a hemisphere which was on one side at an earlier time is on the same side half the period of rotation of the rotating sphere later, a fact about identity over time, does not supervene on local material continuities. At least this is so if these continuities are described in terms which do not already incorporate the facts about identity over time, e.g. by including information about angular velocities. For the velocity of a thing, e.g. a point on the surface of a sphere, is just the distance travelled by that thing over a period of time through which it persists.<sup>14</sup>

A third example, due to Kripke, involves two point particles, a and b, heading straight for each other. There are two possibilities exactly alike with respect to the distribution of instances of material properties across space-time. The particles collide and a goes in one direction orthogonal to its pre-collision direction and b goes off in the opposite direction. Alternatively, the particles collide and b goes off in the first direction and a in the second. These two possibilities differ with respect to facts about identity, e.g. whether it is a or b that is heading north after the collision. However, because we are dealing with point particles, whose centers of mass actually meet when they collide, the two possibilities may be supposed not to differ with respect to the distribution of material properties over space-time and so do not differ with respect to material continuities. Once again we seem to have a counterexample to the view that facts about identity over time supervene on facts about material continuity. There are possible

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14. Perhaps angular velocity or momentum could be introduced as a primitive material property assignable to material things at instants.

situations which differ with respect to facts of the first sort without differing with respect to facts of the second sort.

If taken at face value this third sort of example raises a difficulty for the Complex View even when the special relations uniting stages into a persisting thing are supposed to include counterfactual dependence. For it seems as if relations of counterfactual dependence should themselves supervene on the distribution of property instances, or, as I would say, the distribution of cases, over space-time.

In the example of the colliding point particles the inclusion of information about counterfactual dependence between stages would only work to discriminate them if different patterns of counterfactual dependence held in the two possible worlds. But since the two worlds are exactly alike in terms of the distribution of material property instances over space-time it is hard to see how different patterns of causal relations or counterfactual dependence could hold in the two worlds. So it seems that the Complex theorist needs to say something more about this sort of example. It won't do just to remind us that counterfactual dependence between stages is one of the special relations mixed into the gen-identity relation.<sup>15</sup>

Ironically, the Complex theorist could defend himself in the spirit of Naming and Necessity.<sup>16</sup> He could say that the pair of counterexample worlds are if possible, not relevant, because not representative of any de re possibility for the kinds of things for which the Complex View is put forward as an a posteriori though necessary claim. If we discover that the fundamental particles are not point particles then they are

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15. Hence I cannot see that the Armstrong-Shoemaker-Robinson line can be adapted to satisfactorily deal with this example.

16. Kripke, op. cit.

necessarily not point particles and so necessarily their centers of mass never meet in a collision. So even if the Complex View is false for point particles it could be a de re necessary truth that every actual persisting thing is a complex. Here the Complex View and the supervenience claim it implies is being defended in the same way as one might defend Materialism, understood as the claim that all the facts supervene on the material facts, in the face of the claim that the notion of a non-material entity is a consistent one. In assessing the truth of Materialism, possible worlds in which there are spirits are not relevant unless Materialism is put forward as an analytic doctrine rather than an a posteriori claim about the nature of things in the actual world.

Having outlined this sort of defence, I want to say that I do not find it wholly satisfactory since it gives too many hostages to scientific fortune. For this line of defence suggests that the Complex View is false if the true physical theory distinguishes possible situations which differ only with respect to the locations of two individuals with the same nature.

Having indicated some of the ways in which a Complex theorist might defend his characteristic supervenience thesis against apparent counterexample, I want to close this chapter with an objection which does show that the scope of the Complex theory should be limited.

This objection is suggested by some remarks of Judith Jarvis Thompson in a recent article.<sup>17</sup> She claims that the doctrine of

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17. "Parthood and Identity Across Time", The Journal of Philosophy, 80, 1983.

temporal parts is a "crazy metaphysic" because it implies that "if I have had exactly one bit of chalk in my hand for the last hour, then there is something in my hand which is white, roughly cylindrical in shape, and dusty, something which also has a weight, something which was not in my hand three minutes ago, and indeed, such that no part of it was in my hand three minutes ago. As I hold the bit of chalk in my hand, new stuff, new chalk, keeps constantly coming into existence ex nihilo."<sup>18</sup>

As it stands, this is the kind of objection which the friend of temporal parts in general and the Complex theorist in particular is used to brushing aside.<sup>19</sup> It is correct that on these views a persisting quantity of chalk will be a succession of distinct (i.e. non-overlapping) temporal parts. But it is not a consequence of either of these views that temporal parts of the quantity of chalk come into being ex nihilo. On the temporal part view, of which the Complex View is a specific version,<sup>20</sup> a material quantity slice's coming into being implies the existence of a slice of a material quantity such that there is no other slice of that kind of quantity which is causally responsible for and continuous with the first slice.<sup>21</sup> A material quantity slice's

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18. Ibid., p. 213.

19. For rejoinders to a series of similar objections to the temporal part view see R. Taylor, "Spatial and Temporal Analogies and the Concept of Identity", The Journal of Philosophy, 52, 1955.

20. The other version is the view that although persisting particulars are successions of counterfactually dependent and continuous stages, there are further transcendent facts about gen-identity which make such specially related stages stages of the same persisting particular. Cf. fn. 5, p. 61.

21. I omit the typical temporal ordering in order to give a general characterization which allows for time-travelling material quantities.

coming into being ex nihilo, requires not only that this condition be fulfilled but also that there be no slices of things of the sort out of which material quantities of the sort in question could be made and which are such that they are continuous with and causally responsible for the material quantity slice. Neither of these conditions are satisfied in the example of the chalk. So the charge that quantities of chalk are coming into being ex nihilo can be met.

However, a related charge directed at the level of the fundamental entities out of which temporal parts or slices are constructed seems to me to hold good. On the temporal part view, when a quantity of chalk persists the underlying facts involve relations of counterfactual dependence between earlier and later fundamental material property instances, instances of the fundamental material properties found in chalk. These instances are distinct cases and the kind of counterfactual dependence between them is existential dependence, i.e. it consists in the holding of relations of the form: if  $C_1$  had not existed  $C_2$  would not have existed. I cannot see that this is anything but a situation which deserves to be described as one in which earlier cases of fundamental material properties bring into being or contribute to the bringing into being of later cases of fundamental material properties. Moreover, these bringers into being quickly cease to be. They are replaced by the cases they bring into being.

How long do such cases last according to the temporal part view? A little reflection shows that they are either instantaneous or arbitrarily short-lived. Suppose we consider a non-instantaneous case. It persists, i.e. exists at successive times. So on the temporal part view it is composed of time-slices. Those time-slices or temporal parts

are sums of cases which are either instantaneous or have temporal parts as proper parts. And so on, either ad infinitum, getting smaller and smaller stages consisting of more and more short-lived cases, or terminating at instantaneous cases.

The conception of the underlying reality of persisting material things which the temporal part view implies has now become evident. The persistence of material things is the gross effect of instantaneous or arbitrarily short-lived cases of fundamental material properties bringing into being other instantaneous or arbitrarily short-lived cases of fundamental material properties. Miraculously, there is nothing disruptive about these extremely rapid creations and annihilations. Everything goes smoothly so that for all investigation could ever reveal all that is happening is that time is passing. I find it very difficult to believe in such extremely rapid and non-disruptive creations and annihilations. A world which exhibits gross spatio-temporal continuity as a result of them seems to me to be an utterly miraculous world. For in such a world literally no part of the immediately past reality presently exists.

The alternative is to think of cases of fundamental material properties as enduring -- as remaining one and the same while they persist and without having temporal parts. Then gross continuity becomes less mysterious. Since cases will tend to persist unless acted upon in destructive ways a large part of the reality now present will be present in the very next instant. For example, if there are kinds of fundamental particles and so basic cases of these kinds, then many of the basic cases which made up the chalk in my hand five minutes ago will, as a result of local bonding forces, continue to make up the piece

of chalk in my hand. So the chalk five minutes ago will share many parts with the chalk now.

I think the best response open to an advocate of the Complex View is to qualify that view and opt for a mixed theory of persistence: endurance for material properties and kinds, perdurance for the physical objects they compose. Such a theory can look very plausible. (It also deals with the example of the colliding point particles. If such particles endure then one need not suppose that facts about their identity over time supervene on facts about continuity and dependence.) The mixed theory has it that as a result of bonding forces between enduring cases of fundamental material properties and kinds there are successions of sums of such cases which satisfy the open-textured spatial and temporal unity conditions associated with one or other of our nominal kind concepts -- table, chair, ship, dog, etc. On this mixed theory, perdurance is a kind of secondary quality, in the sense of being the gross effect of the endurance of the explanatorily fundamental parts of perduring things.

There are problems for the mixed theory. I do not see just how the new characterization of stages of non-fundamental material things will go once it is allowed that enduring cases of fundamental material kinds, i.e. enduring particles, make up part of the reality of such a material thing at a time. There is also the problem of a very well preserved thing which never loses any of its enduring parts. How could it have temporal parts? None of its parts has them. (See Chapter 5, Section 1). These problems aside, the question remains as to whether the mixed theory could provide a satisfactory treatment of instances of our everyday nominal kinds. Are all such individuals complexes? My own

view is that the Complex View of fairly complicated living things is very unattractive. In Chapter 3 the problems for a Complex View of people are set out. Chapter 4 offers an alternative to the Complex View. Chapter 5 applies that alternative to organisms in general and people in particular.

### Chapter 3 -- People

#### 1. Versions of the Complex View of People

A Complex View, globally applied, makes gross continuity puzzling. As well, more specific difficulties can be found with the Complex View of members of at least one class of persisting things -- people.

The Complex View of people, having been espoused in different forms by Parfit, Armstrong, Shoemaker, Perry, Lewis, and Nozick, has a fair claim to be called the orthodox view in the matter of personal identity.<sup>1</sup> What unifies these theorists despite their differences is that they take people to be perduring complexes. Each either explicitly offers or allows that we could introduce a relation of personal gen-identity between person-slices or persons-at-times, where that relation is regarded as some construction out of relations of causal dependence and mental and physical continuity. Each believes that the persistence through time of a person is nothing more than the holding of this composite relation between earlier and later person-slices. A persisting person on any of these views is a sum of person-stages unified by the personal gen-identity relation.<sup>2</sup>

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1. References to Parfit, Armstrong, Lewis and Nozick were given in Chapter 2. John Perry's version of the view is outlined in "Can the Self Divide?", The Journal of Philosophy, 69, 1972 and in "The Importance of Being Identical", in A. O. Rorty, The Identities of Persons (University of California Press, 1976), Shoemaker's in Shoemaker, op. cit. and "Persons and their Pasts", American Philosophical Quarterly, 7, 1970.

2. Of course none of these theorists explicitly introduce person-stages as sums of cases. Typically, little is said about what person-stages are. But it seems obvious that a stage must incorporate property instances which exist in the region which it occupies. And if property instances are not universals fused with regions then it is hard to see how they could be anything but cases.

As well as differing over what weightings are to be given to psychological and to physical continuities and over whether psychological continuities are reducible to physical continuities, these Complex theorists disagree over whether the personal gen-identity relation is transitive and over what sorts of intransitivities it might permit. Thus disputes arise over which gen-identity relations hold in a situation supposed to be one in which one person splits into two people.

Since people, unlike amoebas, are not naturally apt to split, various artificial means of splitting have been discussed in the literature. Among the most compelling examples is one in which the brain of a patient whose body is ravaged by a degenerative disease is removed from his body and divided into its two hemispheres. The left hemisphere is transplanted into a receptive, brainless body. The transplant takes and a person -- call him Lefty -- a person with the left hemisphere of the original patient, leaves the hospital some days later. The right hemisphere is also transplanted into a receptive, brainless body. This transplant also takes and another person -- call him Righty -- a person with the right hemisphere of the original patient, leaves the hospital some days later.<sup>3</sup>

This sort of example can be made to seem very puzzling by the following considerations. Patients survive hemispherectomy (having one hemisphere removed). This surgical procedure is sometimes offered for a patient with a massive and malignant tumor in one of his hemispheres. Patients who have these operations are mentally impaired, but what is surprising is that the

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3. 'Lefty' and 'Righty' should be understood as abbreviated descriptions, i.e., as abbreviations of 'the person who after the operation has the original patient's left hemisphere' and 'the person who after the operation has the original patient's right hemisphere' respectively.

impairment is not as radical as one might have thought. The impairment is limited by the fact that capacities to subserve some mental functions are duplicated in both hemispheres. Indeed this is less so for us than for the lower animals. They show less hemispheric specialization than we do. However, there is evidence that hemispheric specialization, i.e. the non-duplication of capacities to subserve mental functions, can be limited in humans by congenital defects which cut down the amount of cross-hemisphere communication.<sup>4</sup> Theoretically, in such a patient the capacity to subserve his mental functions could be duplicated, each hemisphere being able to take over all or most of his mental functioning. We may suppose the original patient in our example to be so. Thus we have very good reason to believe that he could survive either left- or right-hemispherectomy and no reason to think that Lefty has a better claim to be him than Righty or vice versa.

But surely Righty does have a good claim to be the original patient. For suppose the attempt to transplant the original patient's left-hemisphere had failed. Would we not have regarded Righty as the original patient surviving in a donor body? For, is it not so that enough of the important relations of mental and physical continuity and dependence which any Complex theorist would regard as constitutive of the personal gen-identity relation hold between the patient before the transplant and Righty after the transplant? Certainly any Complex theorist who believes that one could survive first having one's whole brain transplanted into a brainless and receptive body and then survive hemispherectomy ought to regard the continuity and dependence between the original patient and Righty as enough to ground gen-identity.

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4. One such defect is the congenital absence of a corpus callosum. On this and related matters see Charles E. Marks, Commissurotomy, Consciousness and Unity of Mind (Bradford Books, 1981).

An equally compelling case can be made in favor of the view that the original patient would have survived as Lefty had the attempt to transplant the patient's right hemisphere failed. In the situation imagined to be actual both transplants succeed. This leaves us with a puzzle which divides Complex theorists. Either we attempt to make sense of the claim that the original patient survives as both Lefty and Righty or we deny that the original patient survives as either.

The former alternative involves denying that the personal gen-identity relation is transitive. Post-fission stages of Lefty are gen-identical with each of the person-stages prior to the fission. Those stages are in their turn gen-identical with post-fission stages of Righty. But no post-fission stage of Lefty is gen-identical with any post-fission stage of Righty.

The latter alternative is also problematic. It clashes with our very strong intuition that the identity or distinctness of, e.g., Lefty and the original patient cannot be a fact which concerns the existence of some other person Righty. Questions of identity and distinctness do not seem extrinsic in this way.

Lewis and Perry, who hold what might be called the Close Enough Continuer Theory adopt the former alternative. They regard any stage which is a sufficiently close continuer of a person-stage as gen-identical with that person-stage. Lewis supposes that in the example of Lefty, Righty and the original patient there were two continuant people all along -- two people who shared stages before the transplanting and so were then properly counted as one -- but who diverged afterwards and so were then properly counted as two. Perry supposes that there is still a third continuant person who survived the splitting and who after the splitting consists of all the stages of Lefty and all the stages of Righty.

The latter alternative, in effect what Nozick calls the Closest Continuer Theory, is adopted by Shoemaker, Nozick and, with an interesting wrinkle, by Parfit. They take it that an otherwise sufficiently close continuer of a given person-stage is gen-identical with that stage only if there is no better or equally close continuer of the given stage which is contemporaneous with the first continuer. In our example, a pre-fission stage of the original patient is equally well continued by contemporaneous post-fission stages of Lefty or Righty. So on the Closest Continuer Theory no pre-fission stage of the original patient is gen-identical with any post-fission stage of Lefty or Righty, which is to say that the original patient does not survive as Lefty or as Righty. Parfit's position, so far as I can make out, is essentially this. However he also puts forward the view that such cases show that all the content of the relations that matter in gen-identity and so (sic) everything which it is reasonable to care about in survival can be seen to hold twice over in the example at hand. As a consequence of this view he proposes that we should talk of the original patient surviving as Lefty and as Righty without admitting the usual implication of such talk, i.e. that surviving is a matter of (gen-)identity.

## 2. Objections From the Nature of Experience

A traditional objection to Hume's view that people are bundles of impressions and ideas is that this view fails to capture the sort of dependence which exists between a person's experiences and that person. Talk of people as bundles of impressions suggests that it is merely contingent that a token experience actually had by a person was had by that person as opposed to another person. For if the relations which unite impressions (or experiences considered independently of their intentional objects<sup>5</sup>) are contiguity and causal dependence then it seems that an impression actually united to one person-bundle by such relations could have been united to a different person-bundle by relations of the same sort. Indeed, it is not clear what on the Humean view makes it impossible that an impression should exist unbundled and so unowned by any person. But surely it is absurd to suppose that the very same token experience or impression actually had by Jones could have been had by Smith and at least as absurd to suppose that an experience or impression might be had by no one, indeed by no sentient being at all.

In this section, objections of the same general type will be brought against the Complex View of people. It is not that it is obvious that the Complex View of people escapes the simple objections which apply to the Bundle view. Quite the contrary, one has the feeling that the only reason that such simple objections cannot be straightforwardly pressed against the Complex View is that Complex theorists have skirted the question of the synchronic unity of a person -- i.e. what unites a cluster of personal characteristics and mental

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5. This is the way in which I am thinking of experiences throughout this section.

and physical events into a single person-stage. The relations they would most naturally appeal to -- contiguity, continuity, and causal dependence -- are just Hume's. It is hard to see how they would do better than he did.

The objection that the Closest Continuer Theory implies that a person's token experiences might have been had by a different person can be pressed in a more roundabout way. Consider a variant on the example of hemisphere transplantation outlined in Section 1. The original patient's left hemisphere is transplanted into a brainless and receptive body. The transplant takes and a person, Lefty, leaves the hospital sometime later with the original patient's left hemisphere fully functioning as the material basis of his (Lefty's) mental life. Down the hall, in a different operating theater, doctors are frantically trying to transplant the original patient's right hemisphere into a different receptive and brainless body. They happen to fail. So in this variant case on the Closest Continuer Theory the original patient survives as Lefty. Lefty's experiences are experiences of the person who is the original patient. Consider one of Lefty's post-operative experiences -- a particular stabbing pain behind his eyes at a particular time soon after he wakes up. This experience is actually had by the person who is the original patient. But it might not have been had by that person according to the Closest Continuer View.

To see this, consider a possible alternative to the situation being supposed to be actual. The doctors frantically working with the right hemisphere down the hall could have succeeded in transplanting it so that as well as Lefty we could have had Righty after the operation. On the Closest Continuer Theory, if this had happened then the original patient would not have survived as Lefty or as Righty. The abbreviated descriptions 'Lefty' and 'Righty' would then pick out people who came into being after the

transplanting operation. However, even in this possible situation the sequence of stages constituting the original patient and Lefty and the relations of continuity and dependence between those stages are exactly the same as they actually are. All that differs is the doctor's success in the operating theater down the hall. Thus it is legitimate to suppose that in this possible situation Lefty wakes up as he actually did and has the very same token experience of the stabbing pain at the same time as he actually had it. But in this situation the person who is the original patient is definitely not having the experience in question, at least according to the Closest Continuer View.

A further twist can be given to this type of objection. Suppose that when Lefty wakes up and has the pain in question, the doctors are still struggling with the right hemisphere in the room down the hall. One hour later they fail to transplant the hemisphere. Their failure depended only on last minute bad luck at the quantum level which led to certain biochemical events which led to tissue rejection and ultimately to failure. Then according to the Closest Continuer Theory at the time at which Lefty had the pain it is indeterminate whether or not the original patient is having the pain! This is a matter of fact which is only settled some time later. As against this, surely the fact as to whether or not a person is having an experience at a time is something settled at least by all the facts concerning just what happens up to and including that time. Notice that these consequences about the ownership of experiences are just sharper illustrations of a more general defect of the Closest Continuer Theory -- viz., that it makes gen-identity between stages much too extrinsic a matter involving, e.g. goings on in rooms neither stage is located in at times after which both stages have ceased to exist. Of course in one sense any theorist can invent

any sort of relation he likes and call it 'gen-identity'. But the more extrinsic a matter its holding between stages seems to be the less it will seem to be adequate as the unity relation which unifies a series of stages into one and the same continuant person. For we don't believe that questions about the cross-time identity of people are such highly extrinsic matters.

Nor is the Close Enough Continuer Theory immune to serious objections from the nature of experience. (Here I deal with Lewis's version though the same points directly apply to Perry's version.) It does not straightforwardly allow the kind of flip-flop of ownership of token experiences which arises on the Closest Continuer Theory. But it does have some curious consequences of its own.

The theory's treatment of fission is predicated on the possibility of two continuant people sharing pre-fission stages. Lefty and Righty are both the original patient or, less obscurely, 'the original patient' turns out to have been a rotten definite description. After the fission event we can distinguish two patients, Lefty and Righty, who were indistinguishable before the event. Before the event they had just the complement of hands, feet, thoughts and experiences which one person would normally have. Looking back on one such token experience Lefty and Righty could each truly say that he had the experience in question. As against this I take it that our ordinary intuition is that necessarily each token experience is had by one and only one person.

It might be thought that a Close Enough Continuer theorist could do some effective haggling over this intuition. He might say that on the Complex View person-stages are the primary bearers of a person's experiences, so that part and parcel of adopting the Complex View is supposing that our intuitions apparently about the relation between a person and his experiences are

properly cast as intuitions about a person-stage and its experiences. The Closest Continuer theorist might also be thought to benefit from this sort of haggling. Instead of the intuition that a person's having an experience is not extrinsic to the person we are given the intuition that an experience's being included in a person-stage is not a matter extrinsic to that stage.

However I think that either version of the Complex View violates one of these recast intuitions. Consider a case of non-instantaneous fission as depicted in Fig. 1.

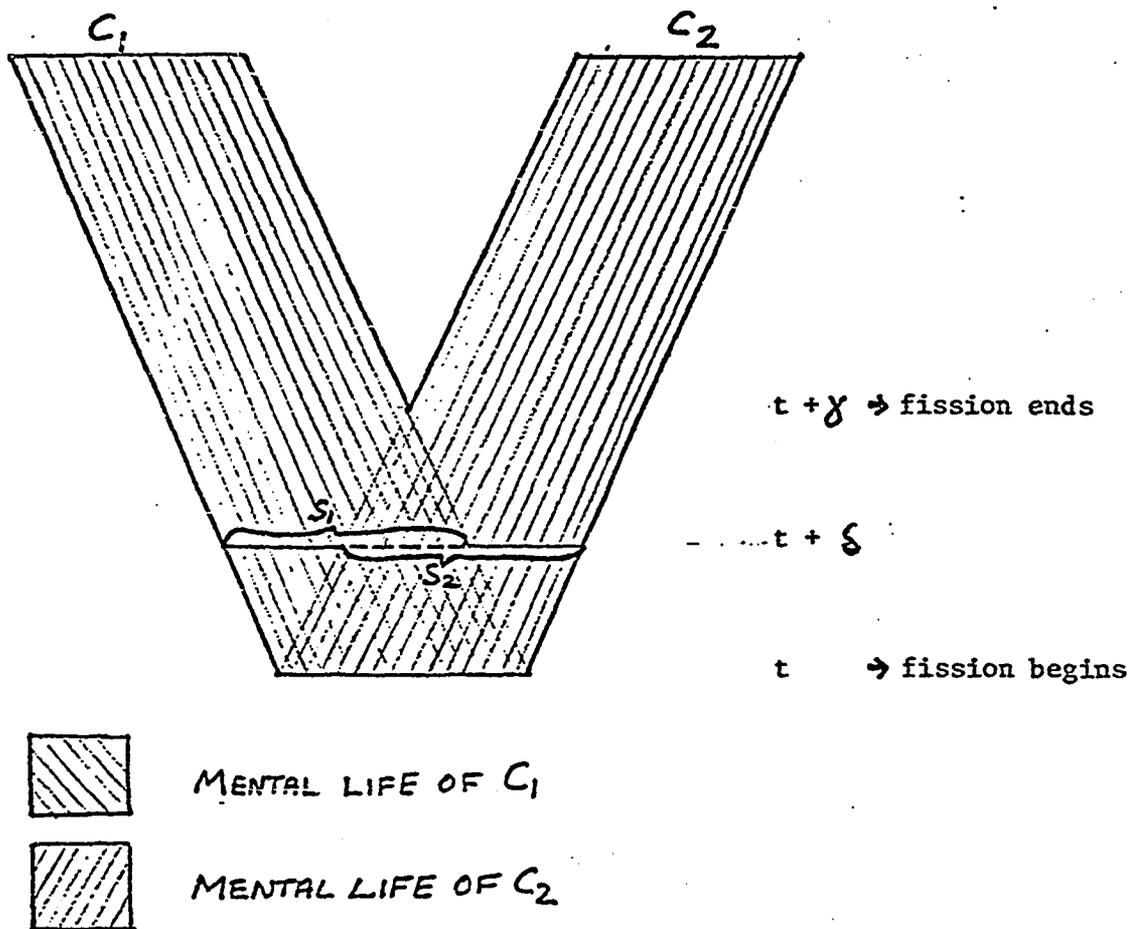


FIG. 1

The fission begins at  $t$  and ends at  $t + \gamma$ .  $C_1$  and  $C_2$  are continuant people with stages partially overlapping to less and less a degree as the fission continues on. There will be such continuant people so long as it is not the case that a person comes into being when the fission begins and ceases

to be when the fission is over and then is replaced by two people who come into being when the fission is over. This latter is inconsistent with the Close Enough Continuer View of fission which has  $C_1$  and  $C_2$  stage-sharing even before the fission and is grossly implausible anyway. So we assume partially overlapping stages.  $S_1$ , a stage of  $C_1$ , and  $S_2$ , a stage of  $C_2$ , are such stages. They are to be as short-lived as one likes. The figure omits any information as to whether  $C_1$  and  $C_2$  exist before the fission or not since we want to remain neutral between the two versions of the Complex View which we are attempting to discredit by this one example.

At each time between  $t$  and  $t + \delta$   $C_1$  has a stage at that time and  $C_2$  has a stage at that time and those stages partially overlap. As time goes by within this period later pairs of stages share less and less until once the period is over stages of  $C_1$  are wholly distinct from stages of  $C_2$ . Let us take  $t + \delta$  as our representative time and  $S_1$  and  $S_2$  as our representative stages. These stages overlap. Person-stages are supposed to include the characteristics -- features and occurrences -- associated with the person during the periods which those stages occupy. So when person-stages overlap there is the possibility that a token experience occurs in the region of overlap. The Complex View seems to have no well-motivated way of ruling out this possibility on its own terms. For its conception of the unity of a person-stage is like its conception of the unity of a person. The unity is aggregative and what justifies the inclusion of an experience among the other characteristics summed or aggregated into a stage are relations of causal dependence and continuity. But then it does seem possible that such relations could tie a single experience to two distinct but overlapping stages, as for example in the case of non-instantaneous fission. However, admitting this

possibility puts one at odds even with the recast intuition that an experience is necessarily associated with one and only one stage.

Finally, the Complex View seems to clash with our intuition that although an experience which a person is having can be more or less vivid or intense, his having it cannot be a matter of degree. It cannot be the case that a person partly has an experience and partly does not. However, the relations of continuity and dependence which according to the Complex theorist unite a single stage to a sum of stages can hold to various degrees. So the Complex theorist has the resources to make sense of the idea of an experience included in a person-stage being partly had by a person who partly includes that stage. Moreover in a situation where the relations of continuity and dependence between person-stages gradually wear out, i.e. hold to gradually decreasing degrees, the Complex theorist can make sense of the idea that whether a particular experience is had by a particular person could be a matter to be settled by extending our conventions for cross-time identifications of persons. But neither of these ideas should be made sense of.

Corresponding to many of these intuitions about the experiences of people there are intuitions about people which the Complex View appears to flout. Just as we suppose that whether a person identified earlier is presently having an experience cannot be a highly extrinsic matter, nor a matter of degree, nor a matter of convention, we also suppose that whether that person presently exists cannot be a highly extrinsic matter, nor a matter of degree, nor a matter of convention. The Complex View in one or other of its forms seems apt to violate these intuitions.

### 3. The Complex View and Self-Concern

If we discover that the adoption of a philosophical view rationally requires a radical change in our cherished practical attitudes then we should look again at that view. If we really do cherish those attitudes and the practices they make possible then the required change must be weighed as a considerable cost of adopting the view in question. So the alternatives to the view in question become correspondingly more attractive. And if there are other objections to the costly view then the alternatives may look very attractive indeed. This is the situation with respect to the Complex View of people and our parochial biases in favor of our friends, our familiars and ourselves.

Let us introduce a little terminology in order to state precisely what the Complex View of people implies about these attitudes.<sup>6</sup> Suppose we call any end, activity or state of affairs towards which an individual has a strong pro-attitude a project of that individual. Now among a person's projects we may distinguish his ego project, viz. that he himself continue to exist, and other more full-blooded personal projects, e.g., ends which he might formulate as 'that I develop these capacities which I have', 'that I help these people to flourish', 'that I support this organization', 'that I make these contributions', etc. The characteristic feature of these personal projects is that for them to be realized, conditions essentially involving the person himself must be satisfied as well as conditions involving the world in general. So a person's personal projects are not achieved if someone else

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6. My terminology is taken from J. Perry, "The Importance of Being Identical", op. cit. which gives a version of the more general argument from the Complex View to Neutralism stated here. Perry seems to endorse what I call Neutralism but he does not face up to its unattractive consequences for other-regarding attitudes.

just like him takes his place in the world and brings about the general conditions required for the satisfaction of the first person's personal projects. Such a replacement could achieve or fulfill only the impersonal counterparts of the original person's personal projects; for short, the original person's impersonal projects. These are projects which he might formulate as 'that capacities of this sort be developed', 'that these people be helped to flourish in these ways', 'that this organization be provided with the kind of support that a person like me is well equipped to provide it', 'that these contributions be made'. These specify conditions on the world which could obtain even if the person whose projects they are were to cease to exist.

There is a thesis in the theory of value, a thesis appropriately called Neutrality, which has it that a person's personal projects are only derivatively valuable. That is to say, one's personal projects are worthy objects of pursuit only in so far as their impersonal counterparts are worthy objects of pursuit. Neutrality allows that one might have good reason to have the personal projects one does in fact have. For those projects may for practical purposes be among the best instruments one can employ in the achievement of impersonal value. This will be so when the impersonal counterparts of one's personal projects are worthy objects of pursuit and one is well-adapted to achieve those impersonal projects because of one's history and nature. One's ego project is also justified under these circumstances. For its fulfillment is a necessary condition for one's pursuit of one's personal projects and pursuing them may be among the best ways in which one can achieve valuable impersonal ends. Indeed since one's impersonal projects will be as detailed and ramified as their personal counterparts one may be the only effective executor of one's impersonal projects that there will ever be.

I take it that Neutralism is an extreme and implausible thesis. At the other extreme there is an equally implausible view -- Radical Egocentrism -- which has it that while each person's personal projects are non-derivatively valuable to him and him alone, his impersonal projects are not at all worthy objects of pursuit but perhaps projects he has reason to advertise in order to persuade others to fall in with his ends. As against both Neutralism and Radical Egocentrism, I take it that we are right to value the carrying out of our personal projects both non-instrumentally and because they serve the worthy impersonal ends that are their impersonal counterparts.

If intuitions against Neutralism need to be stirred up the following fantastic case serves nicely. Suppose weakness of will is discovered to be due to the prevalence of a certain chemical in the frontal lobes of the brain. Now weakness of will, i.e. not being motivated by an end in proportion to the extent to which one finds it valuable, is a defect which tends to make us poorer executors of our impersonal projects than we otherwise might be.<sup>7</sup> So, from the Neutralist standpoint among others, weakness of will is a significant evil because a significant obstacle to the achievement of impersonal value. The discovery of the biochemical conditions of weakness of will prompts the hope for a cure. A joint NEH-NSF committee eventually constructs an enkrasia machine designed to eradicate weakness of will. Most people believe that the machine harmlessly extracts the offending chemical from the brain of any patient who is enclosed within it. But in fact the real process is quite different. The offending chemical cannot be extracted without destroying the patient's brain. No matter, the enkrasia machine employs a replicator which

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7. For this conception of weakness of will, see G. Watson, "Free Agency", The Journal of Philosophy, 72, 1975.

reads off all the details of the patient and produces a duplicate exactly like the patient except that its brain does not contain the offending chemical. Unfortunately there is a drawback. The reading off kills the person who gets into the enkrasia machine. However it is painless and instantaneous and does not leave any unseemly mess. More, the joint committee are sworn to secrecy about the actual working of the machine. People come out of the enkrasia machine feeling great. They are forceful, assertive and pursue their projects with vigor. Never do they fall foul of acedia, torpor or irrational discouragement. From the Neutralist point of view the world is a better place with more impersonal value being realized. None of the "patients" suspect their real origins and with time even the members of the joint committee come to repress their own knowledge of the details of the machine.

Thus the nightmarish side of Neutralism emerges. Presented with such a case or some close variant on it, the Neutralist will approve of what has taken place, recognizing no disvalue in the painless and unmourned replacement of a person by a near duplicate who is a better executor of the original person's impersonal projects.

I contend that the Complex View supports Neutralism. How is it that the Complex View could have such a consequence? On the Complex View the fact of my surviving through a period of time is a complex fact involving the holding of mental and physical continuities and dependencies between things existing at sub-periods of time within the period of time in question. Once the fact of my surviving is treated as a fact which can be broken down in this way, i.e. into qualitative continuity and causal dependence, we can describe a pair of cases, one in which I survive and one in which I am replaced by a duplicate, so that the two cases are alike in respect of qualitative continuity and differ only minimally as to the causal facts which hold in them. If the cases

are correctly chosen the minimal causal difference between them will not seem very important or worth caring about. So if I adopt a Complex View of myself it will seem that everything that it is rational for me to care about could be secured by the existence of a duplicate which replaces me. Neutralism quickly follows. The only projects which I can share with the duplicate which replaces me are my impersonal projects. But if everything it is rational for me to care about could be secured by the existence of the replacing duplicate then my personal projects are at most only valuable derivatively. That is, my pursuing them is worth the trouble only because in pursuing them I pursue their valuable impersonal counterparts.

The burden of the argument from the Complex View to Neutralism rests on the step from the Complex View to the claim that everything that it is rational for a person to care about could be secured even if he were to be replaced by a duplicate.

Suppose that a Complex theorist follows Perry and takes the important relation in personal gen-identity to be mental continuity secured by its normal cause, i.e. the survival of the brain subserving the mental life in question. Then relative to this account of what is necessary for a person to survive, i.e. the holding of sufficient mental continuity between person-stages, continuity due to the survival and continued operation of the brain associated with the earlier person-stages, there will be possibilities of replacement which seem to be as good as survival. For example, consider so-called "beaming down" from the starship Enterprise, a process which involves obliteration in the "teleporter" room of the starship, transfer of information down to earth, and the rapid constitution of a person just like the one who got into the "teleporter" room. In such a situation there is strong mental continuity between the person-stage in the "teleporter" room and

the person-stage which appears on earth. But that continuity is not secured by its normal cause, i.e. the uninterrupted survival of a brain. So, on the version of the Complex View in question, so-called "beaming down" is not a process which any person survives. However, if we simply consider the difference between mental continuity secured by its normal cause and mental continuity secured by the process involved in beaming down, i.e. consider it independently of any claims made for this difference by the Complex View in question, then it is hard to see how the causal difference is worth caring about all that much.

To dramatize the point, suppose a Perry-style Complex theorist came across an advanced society of human beings who believed that there was no problem about "teleportation". How could the Complex theorist get them to see just what important thing was missing from the process of "beaming down"? He might say "None of you actually survive this process." But one of them could respond as follows. "Just so if we accept your account of the crucial relation in survival. However, on your account, all the important difference between what occurs in a case of "beaming down" and in a case of survival comes down to is that in "beaming down" the mental continuities present in a case of survival are not produced by the usual sort of causal process. You seem to think that each one of us should care about that difference. But this seems to us to be a childish preference for one sort of cause over another. Suppose you had the choice between putting your washing machine into the "teleporter" and having it transported across country at great cost. Either way, a washing machine exactly like the one you now own will arrive at the intended destination. Would you accept the extra expense because you think that one of these causal processes by which continuity of the washing machine sort is secured is better than another? Surely, considered as processes in

the world, which is what they are, neither causal process is better than, more valuable than, the other. To think otherwise is to adopt a bizarre superstition about certain causes. Similarly, consider the two causal processes which might produce equally good executors of my impersonal projects -- the persistence of my brain and the propagation of an energy beam. What is so much better about the first as opposed to the second simply considered as processes in the world? You say that only if my brain persists will I survive but your theoretical account of my survival makes it seem not importantly different from what happens in "teleportation".

Like Perry, I think that considerations of this sort show that, on the Complex View in question, the significance of gen-identity, and so of survival, is derivative. While survival almost always guarantees the mental continuities worth caring about, those continuities can be secured independently of survival as in the case of "beaming down". Everything worth caring about in caring about one's survival could be secured by my duplicate who appears at the other end of the "beaming down" process.

Now the argumentative strategy just employed is quite general. Presented with any specific version of the Complex View of people with its account of the continuities and dependencies which are crucial in survival, we can then run through a version of the argument. First, cast the theory in a form in which it says that some future person sufficiently continuous with me is the same person as me only if such and such causal dependencies hold between me now and that person then. Next, contrast an example which the theory does count as an example of survival with an example where the right pattern of causal dependence deemed necessary for survival is not present but in which exactly the same continuities of the sort which the theory deems necessary are found. Then ask whether the difference in causes is enough of a natural

difference to justify our special and non-derivative concern for our future selves, a concern which we would withhold from our future replacements even though they could be indistinguishable from our future selves in all intrinsic respects. Either the Complex theorist admits that there is nothing to justify our non-derivative concern for ourselves or he is committed to a bizarre superstition about the value of certain causal processes per se.

Outlining this argument from the Complex View to the view that everything that it is worth caring about in caring about one's survival could be secured by a duplicate by whom one is replaced may make us wonder whether Neutralism is not right after all. Isn't there something unjustified about non-derivative self-concern, i.e. concern which one would not extend to one's duplicate. Isn't such non-derivative self-concern simply unjustified egocentrism?

Not if we take our ordinary intuitive judgements seriously. Suppose, for example, that a duplicate of me is made and the duplicate and I fall into the hands of my enemies who offer me the choice between suffering forty-five minutes of intense pain with death at the end and allowing my duplicate to undergo an hour of the same sort of pain and then be killed. Now, ordinarily, we would think that anyone who underwent the torture and death himself, rather than have another suffer slightly more, was morally heroic. We would not regard him simply as doing what reason requires. Rather, we would regard him as giving more weight to other-regarding reasons and less weight to self-regarding reasons in a way that few of us could manage. This is why we suppose that it would be supererogatory to choose torture and death for oneself in such a situation. Not so on the Neutralist's view of the situation. We may suppose that the duplicate would be as good an executor of my impersonal projects as I would be. On the Neutralist view, my only reason

for valuing myself and my continued existence is that this typically offers the best chance for the fulfillment of my impersonal projects. So, in the situation described, every reason I have to value myself and my continued existence is countered by a reason to value the duplicate and his continued existence. Hence the natural reaction "But it's me not him who will suffer and die and surely that's a reason for me" is just mistaken on the Neutralist view. The weight of the reasons that there are for me to sacrifice myself are decisive. The consideration that if I choose to suffer and die then someone who could execute my impersonal projects would suffer less just straightforwardly settles which is the rational choice.

This strikes me as an absurdity. So far from thinking of someone who reasoned in the Neutralist way as admirably free from unjustified self-concern, we would instead regard him as alienated from his own life. For what are these impersonal ends that one has and which, according to Neutralism, one is supposed to regard one's life as an instrument for the promotion of? Most of them, I suggest, are fairly grubby, circumscribed and unheroic. If the worth of one's life were to be measured only in terms of its contribution to them, one might rationally feel that it would be better to quietly disappear from the scene and let someone else take over, someone with better ends as well as better resources to achieve those ends. Fortunately many of us find the living of our own life valuable independently of the contribution it makes to our impersonal ends or to impersonal value in general. For me and for my friends and familiars it is a good thing that I, as opposed to some duplicate, go on living. On the Neutralist view this thought is just a mistake.

As I have just suggested, Neutralism gives a distorted picture of the nature of more than self-regarding reasons for acting. It also counts irrational a bias which is a constitutive feature of friendship. Suppose I

believed that Neutralism were true. Then I would believe that everything that it is rational for my friend to care about in caring about his survival could be secured if he were to be replaced by a duplicate. But how can I rationally be more discriminating on his behalf than I believe that he ought to be on his own behalf? Should I not also conclude that everything that it is rational for me to care about in caring about his survival would be secured were he to be replaced by someone indistinguishable from him? If my friend were to discover that I held this view he might reasonably object that I did not care for him for his own sake, that he was for me a mere means to the end of being in a relationship with someone with a certain complex of features. There would be something right about this rebuke. Friendship does involve valuing the friend for his own sake and not just as a means to certain valuable ends whether they be his own or mine. And as friendships become more intimate this is more pronounced. We can understand a husband who cares little when he discovers that his wife recently replaced her wedding ring with a duplicate after the original was lost. But what are we to think of a husband who discovers that his wife was recently replaced by a duplicate and remains just as calm?

I suggest that we are for ourselves and for our friends and familiars more than loci of impersonal value. If we need to speak of agent-centered value and the corresponding reasons which we often invoke 'He's my friend', 'It's my country', 'It's my life' then so be it. For these are the values that the Neutralist fails to recognize as his advocacy of the use of the enkrasia machine and his account of self-regarding and other-regarding attitudes illustrate.

The consequences of Neutralism and so of the Complex View, which implies it, seem not only false but also like the symptoms of a pathology. And it

seems to me that the cause of that pathology is the failure to properly locate the difference between a continuous series of short-lived people and a single person living his life. The difference is a straightforward one -- it is the difference between there being several cases of a kind and one case of a kind -- among the most familiar and intelligible differences that there are. The Complex View of people wrongly assimilates this difference to another which does not matter to us in the same way, viz., a causal difference. This is why Neutralism is a characteristic consequence of the Complex View of people. I suggest that very few of us can really bring ourselves to accept Neutralism. So we should seek an alternative to the Complex View of people.<sup>8</sup> Chapter 4 provides a general alternative to the Complex View. Chapter 5 shows how that alternative provides an appealing account of personal identity.

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8. Tom Nagel has suggested that if continuous replacement by duplicates were to be the norm then we might reasonably come to be concerned about the series-person which included us in the way we are now concerned about ourselves. We might love series-people instead of people and come to think of the enkrasia machine as a wonderful invention. That is as it might be. Given world enough and time, what we fundamentally care about might change considerably. But this does not affect the present point. Our present pattern of concern is not what might represent a reasonable adaptation in bizarre futuristic circumstances. And it is in terms of that present pattern of concern that we must measure the cost of adopting the Complex View with its attendant Neutralism. The cost is great as the previous remarks indicate. We do not diminish the cost by imagining it already paid and so no longer felt as a cost. Imagine for example what changes in thought and attitude we would have to undergo in order to come to believe that being replaced did not really matter.

## Chapter 4 -- Substances

Substance, in the truest and primary and most definite sense of the word is that which is neither predicable of a subject nor present in a subject; for instance, the individual man or horse.

Aristotle Categories 2a11-13

### 1. The Characterization of Substances

The complexes of Chapter 2 are certain cross-temporal sums of non-basic cases. Though a Complex View of all ordinary individuals -- tables, chairs, men, horses -- is frequently adopted, it is important to see that it is not inevitable. An alternative is to see some of these ordinary individuals as substances, as basic cases of non-regional kinds.

There are many divergent strands in the tradition of thought about substance. However, there is a broadly Aristotelian conception of substance on which basic cases of non-regional kinds seem to be good candidates for the title of substances. First, they are not properties or kinds but individuals and so not predicable of or said of many individuals. Secondly, they are not particular characteristics or non-basic cases and so are not present in or exhibited by other individuals.<sup>1</sup> Thirdly, it will be argued that basic cases of non-regional kinds show "the most distinctive mark" of substances -- i.e., they endure, they "remain numerically one and the same while receiving contraries" (Categories 4a10).

Of course it would be the wildest anachronism to suggest any of this as an exegesis of one of Aristotle's notions of substance. All that is being

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1. Here I follow Gareth B. Matthews and S. Marc Cohen, ("The One and The Many", Review of Metaphysics, 21, 1967-8) who take Aristotle's condition that substances not be in a subject to exclude particular characteristics such as Socrates' knowledge of grammar. These particular characteristics are my non-basic cases.

suggested is that the conception of substances as basic cases of non-regional kinds is a fruitful descendant of one strand of thought about substance; fruitful because it organizes our thought about individuation, essence and persistence, because it shows the appeal of hylomorphism and because it allows us to treat the question as to which things are substances as an empirical question.

Whatever its historical antecedents, the conception of substances as basic cases of non-regional kinds is a useful corrective to a degenerate conception of substance that is about in contemporary metaphysics -- the so-called Bare Particular View, the idea of a substance as a characterless substratum in which properties inhere.<sup>2</sup>

The notion of a bare particular gets its appeal from a false opposition. Philosophers are driven to it by finding difficulties with the conception of individuals as purely qualitative, as bundles or sums of properties. Adopting the case ontology already makes nonsense of the view that an individual might be a bundle or sum of properties. Properties are classes and mereological summation is only applied to individuals. But individuals cannot be classes of properties either, for no individual is a class. So on the case ontology no clear sense is to be made of the notion of individuals as bundles of properties. Individuals could be sums of cases, indeed complexes are just such things. This is the most that can be made of the confused thought that

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2. See G. Bergmann, Meaning and Existence (Madison, University of Wisconsin Press, 1960), E. Allaire, "Bare Particulars", Philosophical Studies, 14, 1963, V. C. Chappell, "Particulars Re-clothed", Philosophical Studies, 15, 1964.

For an attack on the common view that such was Locke's conception of substance see C. B. Martin, "Substance Substantialized", Australasian Journal of Philosophy, 58, 1980.

I argue below that recent talk of haecceities is not free of the major weakness of the Bare Particular View.

individuals are bundles of properties. It does have the advantage of avoiding the major objection to the Bundle View. For if individuals are sums of cases, perfect duplication, i.e. two or more individuals having just the same properties, is certainly possible.

Adopting the case ontology not only prevents the Bare Particular View from living off the weaknesses of the Bundle View. It also allows a conception of substance which avoids the weaknesses of the Bare Particular View itself. Thus it takes us entirely beyond the false opposition of individuals as bare particulars versus individuals as purely qualitative.

The major weakness of the Bare Particular View is that it implies that things have implausibly impoverished essences. To see this, think of a bare particular in terms of the pejorative, but here not too misleading, analogy of the coat hook. By hypothesis the hook is to have no qualities. So how could it be metaphysically or logically impossible for any quality to be hung on to the coat hook? No reason, unless we surreptitiously invest the coat hook with a qualitative nature which excludes certain qualities from being added. So if I am a bare particular I have no qualities essentially. I could have been, could become and in other possible situations, now am, a poached egg. Thus the Bare Particular View allows individuals more change and modal variation than we could ever bring ourselves to believe in.

The corresponding argument does not go through for basic cases. For any basic case there is a unique fully determinate kind of which it is a case.<sup>3</sup> A case of the kind Beagle cannot cease to be a beagle, always was a beagle and cannot be taken to figure in a possible situation in which it is not a beagle. Taking substances to be basic cases of non-regional kinds does involve

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3. Cf. (3) of Chapter 1, Section 3.

regarding them as primitively distinct, i.e. involves allowing that they could be distinct even though exactly alike. However, this does not involve thinking of substances as including or being some entity different from their nature or character.<sup>4</sup> Rather, on the case ontology natures always are in the first instance individual, fully particularized. We get to the notion of a nature common to many distinct individuals by abstracting from the individuality of many individuals similar in a certain respect. Thus on the case ontology the problem of the relation between the individuality or haecceity of individuals and their qualitative nature is a pseudo-problem produced by failing to recognize that the notion of a kind or a nature common to many individuals is an abstraction from those many individuals.

Thinking of substances as basic cases of non-regional kinds amounts to thinking of them as individual natures. In this way the extremes of both the Bare Particular View and the Bundle Theory are avoided. Duplication is possible and we get the primitive distinctness that the Bare Particular View provides without the bizarre possibilities of change that it implies.

It seems to me that there is a remnant of Bare Particularism in recent talk about haecceities.<sup>5</sup> If Haecceitism as applied to substances is the doctrine that it is not in virtue of any qualitative feature that a particular substance is this rather than that instance of its kind then Haecceitism for substances is a consequence of the view that substances are basic cases. Any two basic cases of the same kind could be perfect duplicates having just the same intrinsic properties or qualities. And in the possible situation in

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4. I distinguish between the nature or character of a thing -- the totality of its intrinsics -- and its essence. Individuals may have non-essential intrinsics.

5. On haecceities see D. Kaplan, "How to Russell a Frege-Church", The Journal of Philosophy, 72, 1975, and R. M. Adams, "Primitive Thisness and Primitive Identity", The Journal of Philosophy, 76, 1979.

which they are duplicates they will not be distinct in virtue of their different spatio-temporal relations. For surely they will have different spatial locations at different times because they are distinct. Thus although we can perceptually and demonstratively distinguish basic cases of a kind we cannot characterize what that distinctness consists in. Basic cases of a kind are in this sense primitively distinct.

However, this is not to endorse the further view, advocated by D. Kaplan and R. M. Adams, to the effect that we can speak of the haecceity or thisness of an individual where the haecceity of an individual is not that individual but something intimately related to it, such as the property of being that individual.

First, on the case ontology there is not in general such a property for any given individual. For Kaplan and Adams understand the property of being Fido, for example, as a constant function from worlds to the unit class consisting of Fido.<sup>6</sup> But if Fido is a basic case then this function would not be a property.<sup>7</sup> And if there are other basic cases of a kind with Fido then this function would not be a kind.<sup>8</sup> If Fido is a non-basic case then the function in question will be a property only if one of the  $M_i(x,y)$ s is such that Fido bears it only to himself.<sup>9</sup> Hence the function in question will be a property only under very rare circumstances. Moreover it will definitely not be a property if Fido is a substance and so a basic case. Thus substances will not have haecceities in the Kaplan-Adams sense.

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6. Ibid.

7. Properties are functions from worlds to classes of non-basic cases which are united by one of the  $M_i(x,y)$ s including  $Match(x,y)$ . Cf. (13) and (14) Chapter 1, Section 3.

8. Cf. (13) and (17) of Chapter 1, Section 3.

9. Cf. (16).

Secondly, as well as finding no place for an unshareable property like the property of being this substance, the case ontology has no place for the more general conception of an haecceity as a non-qualitative aspect of an individual which is different from that individual. This can only be a vicious abstraction of the same ilk as the bare particular or the prime matter of Chapter 1. For suppose that there was such a thing as my thisness or haecceity. By hypothesis anything which has it is me. However, because it is non-qualitative its being had by some thing does not imply that the thing has some specific sort of qualitative nature. So why couldn't my haecceity be associated with the nature found in the members of the kind Macropus Major? The sheer claim that nothing with my haecceity could be a kangaroo is embarrassingly weak once it is admitted that my haecceity is a non-qualitative aspect of mine.<sup>10</sup> For why should having that aspect exclude having any combination of qualitative features?

The conclusion is that on the case ontology if one must speak of the haecceity of an individual one can only mean to refer to that individual and indicate that its distinctness from other individuals is not a purely qualitative matter. The history of ancient and modern metaphysics shows that it is mistaken to introduce a queer non-qualitative entity -- bare particular, prime matter or a necessarily single-instanced "property" -- to guarantee such distinctness.

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10. Adams makes the sheer claim in op. cit., pg. 24-5.

## 2. Essence and Accident

The conception of substances as basic cases supports essentialism of an attractive sort. Substances have essences; these essences are not artifacts of our classification procedures and so are not merely nominal. They are real features of substances.

By the nature of cases, if a is a case of type F exhibited by a basic case b then necessarily and for any time t if a is exhibited by b at t then b is F at t. Now if a is a basic case then the basic case which exhibits a is a itself.<sup>11</sup> This is so necessarily and at every time at which a exists. Hence if a is a (basic) case of kind K then it is not possible for a to exist while a is not a K. If K is a fully determinate kind then being a K is not just an essential property of a. Rather, since to be a just is to be a case of the kind K, being a K exhausts the whole of a's essence. The essential properties of a are just those which follow from its essence.<sup>12</sup>

As well as having an essence and essential properties which are determined by that essence, a basic case of a kind will also happen to have other properties -- its accidents. It will happen to have them in virtue of its essence, location and relations to other things. If desired one can say that a substance has its accidents at a place, time and world while it has its essence absolutely, not relative to any place, time, world or anything else.

Here then is a clear and motivated distinction between accidental and essential properties grounded in the nature of substances understood as basic cases. I venture to say that this is just the kind of "Aristotelian essentialism" which Quine demanded that the friend of quantified modal logic

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11. Cf. (2) of Chapter 1, Section 3.

12. Cf. (22).

show makes sense.<sup>13</sup> It seems to make perfect sense. If there is no contradiction in the notion of a basic case then there is no problem as to the meaningfulness of a sentence like "Fido is essentially G and accidentally F". Such a sentence will be true if and only if the property of being G follows from the essence of Fido and the property of being F does not, even though Fido is F.

Notice that on the case ontology, the modal adverbs 'essentially' and 'accidentally' need not be treated as quantifiers over possible worlds. Rather, their function can be more realistically represented as indicating modes or ways in which individuals have properties. The corresponding truths about individuals and worlds, e.g., that Fido is G in every world in which he exists and is F in the actual world but not in every world in which he exists, will be guaranteed by any construction of possible worlds to be necessarily equivalent to the truths about the ways in which Fido has the properties F and G. However sentences cast in possible worlds discourse seem to me not to capture what talk of essence and accident is about. Just as the advocates of cross-world identities typically have the intuition that a sentence like "Fido is essentially a dog" is not about otherworldly dogs similar to but not identical with Fido, my intuition is that it is about Fido and his way of being a dog, not about the way Fido is in myriad worlds.

This is not an objection to the standard possible worlds model theory for modal systems nor to its usefulness in explicating talk about essence and accident.<sup>14</sup> The model theory does make it easier to think out the

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13. Word and Object (John Wiley, 1960), Section 41, "however venerable the distinction [between accident and essence] it is surely indefensible; and surely [any] construction ... which so smoothly implements it must go by the board."

14. Cf. S. Kripke, "Semantical Considerations in Modal Logic", Acta Philosophica Fennica, 16, 1963.

consequences of modal claims. Indeed, the account of 'essentially' and 'accidentally' as characterizing ways of having properties is directly at odds with one sort of dismissal of the standard model theory for modal systems, viz. that it is purely formal in that it has no interesting application to ordinary individuals because nothing can be made of the unrelativized distinction between these things' essential and accidental properties, a distinction which a modal system is apt to implement.<sup>15</sup> Moreover, the account of essence and accident just given is at odds with an alternative semantics for modal sentences, one typically put forward as part of a defence of a theory of nominal essence. According to this theory, a thing's essential properties are had relative to the principles or criteria of re-identification which are being applied to it.

For example, a theory of nominal essence would have it that which essential predications are correctly made to a golden statue depends upon whether we consider it as a statue and trace it over time and across the worlds in terms of the causal and qualitative conditions for re-identifying statues, as opposed to considering it as a portion of gold and tracing it over time and across the worlds in terms of the conditions associated with re-identifying portions of gold. Such a theory of nominal essence has widespread support. It has been advocated by A. Gupta and A. Gibbard as a partial response to Quine's criticisms of modality, especially the third grade of modal involvement (quantifying into the scope of modal operators). Gupta elaborated the work of A. Bressan to develop a formal system suited to make sense of constructions like 'x qua K is essentially G' where the 'qua K'

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15. Cf. Quine op. cit. Section 41. J.J.C. Smart has endorsed a similar dismissal in correspondence. The friends of nominal essence sometimes endorse this part of the Quinean criticism, e.g. A. Gupta in The Logic of Common Nouns (Yale University Press, 1980), Chapter 4.

condition is supposed to carry with it the criteria in terms of which  $x$  is to be traced across the worlds.<sup>16</sup> Earlier D. Lewis and D. Kaplan had embodied this sort of idea in counterpart theories with multiple counterpart relations.<sup>17</sup> Indeed, one could capture the central idea of the theory of nominal essence whether one operated with Lewis's Counterpart Theory or Chapter 2's Theory of Hydras (sums of counterpart related world-bound individuals) so long as one had multiple counterpart relations, i.e. multiple criteria for cross-world identifications. Thus, employing Counterpart Theory as it applies to an example of Gibbard's, when a lump of matter -- call it Lumpl -- comes into being at the same time as a statue -- Goliath -- which it constitutes and ceases to be at the same time as the statue ceases to be we are inclined to say

- (1) Lumpl is Goliath

However we are also inclined to say that

- (2) Lumpl could have survived being squashed. Goliath could not have.

How then are we to avoid the inconsistency got by substituting in (2) on the basis of (1), viz.

- (3) Lumpl could have survived being squashed. Lumpl could not have.

The Bressan-Kaplan-Lewis-Gibbard-Gupta line is essentially (qua line) this: the position held by 'Goliath' in (2) even if de re, i.e., outside the scope of the modal 'could have', is not referentially transparent, i.e. does not support substitution of co-designative terms salva veritate. This is because 'Goliath' as a name of a statue is performing more than a referential

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16. A. Bressan, A General Interpreted Modal Calculus (Yale University Press, 1972). A. Gibbard, "Contingent Identity", The Journal of Philosophical Logic, 4, 1975. A. Gupta op. cit.

17. D. Kaplan "Transworld Heirlines" (1967) in Loux op. cit. D. Lewis, "Counterparts of Persons and their Bodies", The Journal of Philosophy, 68, 1971.

function in (2). Rather it, perhaps with the cooperation of the context, is also indicating a counterpart relation or set of necessary and sufficient qualitative conditions for tracing Goliath across the worlds -- if you like, the "statue"-counterpart relation. This gives a trans-world heirline or pattern of tracing across the worlds for Goliath which is different from the one we would get if we employed the "lump of matter"-counterpart relation invoked by the name "Lumpl". Since what could have happened to a thing is on this view what happens to at least one of its counterparts, the truth-values of the modal predications in (2) are sensitive to which principle of cross-world tracing or counterpart relation is invoked by the explicitly used name or the implicit backing count noun or by context. That is why we have (2) true and (3) false. The substitution of co-designative names alters the tracing principles in terms of which the relevant modal predications are to be evaluated.

To get the flavor of Nominal Essentialism it may help to develop a corresponding theory for temporal predication. Suppose the lump of matter presently constitutes the statue so that we are inclined to say

(1') Lumpl is Goliath

Yet the oracle tells us that

(2') Lumpl will survive being squashed, Goliath will not.

How are we to avoid the contradiction

(3') Lumpl will survive being squashed, Lumpl will not.

The parallel theory of temporal predication would have it that although 'Lumpl' and 'Goliath' denote the same stage, a stage existing at the period during which (1')-(3') are uttered, these names do more semantically than merely denote. They carry with them, perhaps via the associated nominal 'lump of matter' and the associated count noun 'statue', distinct gen-identity

criteria. Necessary and sufficient qualitative conditions for being a stage of the same persisting lump as Lump1 is a stage of are somehow associated with the stage name 'Lump1' and necessary and sufficient qualitative conditions for being a stage of the same persisting statue that Goliath is a stage of are associated with the name 'Goliath'. Since a stage will 'survive' being squashed only if it is gen-identical with a stage which exists after the squashing, the question as to whether the stage referred to twice over in (1') will survive is sensitive to which of the two names is used in putting that question.

This diagnosis of what is going on in (1') through (3') is implausible for anyone who thinks that names like 'Lump1' and 'Goliath' denote longer lasting things than stages. Notice that one could accommodate this intuition and give a solution with the same ontology as that employed by the first solution. On the first solution, there are two complexes, i.e. two sums of stages united by two different gen-identity relations. The second solution accepts this, sees the names 'Lump1' and 'Goliath' as picking out these two complexes, and takes (1') as simply asserting that the two complexes share a stage. This second solution would be akin to a variant theory of Nominal Essentialism which took names like 'Lump1' and 'Goliath' to denote different hydras, i.e. cross-world sums of world slices. On this variant (2) is taken to express the proposition that (the hydra) Lump1 has a slice in a world in which (the hydra) Goliath has no slice.

Either theory of Nominal Essentialism is wholly alien to the conception of essence which the notion of a basic case supports. As noted in Section 1, Haecceitism holds for basic cases so that they are not distinct in virtue of qualitative differences. Hence no qualitative sufficient conditions for their identity or distinctness over time or across the worlds can be found. At most

their qualitative essences generate necessary conditions of cross-time and cross-world identity. So there are no modal or temporal counterpart relations for basic cases, at least in the sense of qualitative conditions that would determine which cross-time or cross-world identifications are true. Moreover we may be fairly ignorant about which things are basic cases and about what their essences are. Thus, so far from our competence with respect to judgements like (2) and (2') being properly represented or even idealized as the ability to apply necessary and sufficient qualitative conditions for cross-world and cross-time identifications, we mostly have only a partial grasp of necessary conditions.

Examples of this could be multiplied. There is a legend to the effect that when a band of Australian aborigines first saw James Cook's ship they thought it was a large bird sitting in the water. Did this prevent them from correctly tracing its path through the water? When the Uranians invade us with their humanoid robots, for all practical purposes indistinguishable from human beings, do we then need to know that the robots can survive having their original heads screwed off and a new head screwed on in order to have justified beliefs about which robot is which in the ordinary course of events where no unscrewing takes place? We do not, and this suggests that qualitative criteria play at most an evidential role in making cross-world and cross-time identifications. In the temporal case an hypothesis of persistence is reasonably accepted if it is the best explanation of the observed qualitative similarity and continuity across time. In the modal case, where a possibility involving a particular individual is stipulated subject to correction due to discovered violations of the necessary conditions on cross-world identity generated by the individual's essence, cross-world

similarities of certain sorts can constitute evidence that no such violation is made by the stipulation.

This is just how the epistemology of cross-world and cross-time identifications involving basic cases would go. As we discover more about the nature and essence of the basic case in question our hypotheses of cross-time and cross-world identity concerning it will be more informed and secure.

If we were to discover that what we had taken to be basic cases of a putative kind were really complexes then there would be a motive for adopting the nominal essence theory with respect to these entities as part of the revision which the discovery prompts. For such a discovery would amount to the discovery that basic cases of the putative kind in question did not have to be recognized in an explanatory theory of the world. If all the phenomena involving the putative basic cases could be accounted for in terms of the cases of properties which made them up then ipso facto there would be good grounds for regarding the putative basic cases as mere sums of cases. There would be no further distinctive causal role for the putative basic cases to play once the causal roles of the cases of properties which made them up had been specified. For this to be so, the non-basic cases associated with any putative basic case would have to explain, when taken together, the synchronic and diachronic unity of the putative basic case. If this can be done then what was taken to be a basic case can then be represented as a complex -- a mere cross-time sum of cases not itself a case of a real kind. It is natural to think that this can be done for one member of a putative kind only if it can be done for all members. The kind itself will then turn out to be purely nominal, a useful classification for everyday purposes but not a classification of indispensable explanatory import.

There is an important general point here about the relation between the substance/complex distinction and the real essence/nominal essence distinction. A mere sum of cases not itself a case of a kind will have only a nominal essence. That is, the truth value of modal claims concerning that sum should be taken to be relative to some cross world tracing procedure we have reason to adopt in the contexts in which the claims are made. The modal facts about a mere sum of cases are not determined solely by its nature, i.e. a mere sum has no real essence.

Nothing in the nature of a sum of cases not itself a case of a kind distinguishes some or other of the cases which make it up as especially important or essential to it. All the cases which are intrinsic to the sum are on a par. Each is part of the sum. Prior to our classificatory activity no case intrinsic to the sum stands in any important relation to the sum which another does not. So if we were to suppose that the modal facts about a mere sum were determined solely by part of its nature it seems that we would then have to suppose either that all the cases which are intrinsic to the sum are essential to it or that none of them are. However, for those mere sums of cases which are persisting complexes it is very implausible to suppose either that they could not have been different in any intrinsic respect or that they could have been different in every intrinsic respect. So there seems no plausible way of filling out a doctrine of real essence for complexes.

Of course, relative to a scheme of cross-world identification modal distinctions can be made for complexes. Thus, one might think that nothing originally made of completely different matter from the table on which I am writing could be that table, so that a table of the same shape made by the same manufacturer from completely different planks would not be my table. But this seems simply to reflect a justified attitude to the effect that nothing

made of completely different matter should be counted as my table. What justifies the attitude is the fact that adopting it meshes with plausible gen-identity and stage-unity conditions for tables. If a table made from completely different matter could be my table then it seems that my table could also have been constructed from its actual original matter so that in the one possible situation we have two claimants to be my table. On any reasonable account of the gen-identity and stage-unity conditions for tables the two tables cannot be supposed to make up a single table which is my table. So we have a conundrum which is avoided by the adoption of the cross-world constraint that tables cannot come into being with matter completely different from their actual original matter. Adopting such a constraint on the cross-world tracing of tables is thus pragmatically justified. However, the thought that the constraint is dictated by the real essence of my table and of tables like it will not stand up to scrutiny.

Consider a series of possible worlds. In each world in the series a table is made from certain matter (planks) according to a certain design. The first world is the actual world in which my table is made according to the design. The tables made in the other worlds in the series are also made according to that design. But as we move through the series less and less of my table's actual original matter is used to make a table in a given world. In the last world of the series, a table is made according to the design from matter completely different from my table's actual and original matter. The differences between the matter used in successive worlds can be made as small as one wishes.<sup>18</sup> Which of these worlds represent possibilities for my

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18. Compare R. Chisholm, "Identity Through Possible Worlds: Some Questions", *Nous*, 1, 1967; S. Kripke, *Naming and Necessity* *op. cit.* p. 51, fn. 18 and N. Salmon, *Reference and Essence* (Princeton University Press, 1981), Appendix 1.

table? The constraint just discussed tells us that while the first world in the series (the actual world) does, the last world in the series does not. If the constraint were dictated by my table's nature then there is a modal fact determined solely by my table's essence, a fact to the effect that for some pair of successive worlds  $w_i, w_{i+1}$  in the series,  $w_i$  represents a possibility for my table and  $w_{i+1}$  does not.

Now we have a real puzzle. Surely my table could have been constructed from slightly different matter so that  $w_i$  is not the actual world but some world later in the series. Consider  $w_{i-1}, w_i$  and  $w_{i+1}$ . The difference between the material origins of the table in  $w_{i-1}$  and those of the table in  $w_i$  is of exactly the same degree as the difference between the material origins of the table in  $w_i$  and those of the table in  $w_{i+1}$ . Yet, while the table in  $w_{i-1}$  is my table, as is the table in  $w_i$ , the table in  $w_{i+1}$  is not. How is it that the real essence of my table, an essence present in  $w_i$ , allows the one material difference and not the other?<sup>19</sup>

The Nominal Essentialist's proposal for tables and for complexes in general therefore looks appealing. On that view all we really have is a series of tables in worlds such that each table in a world is very similar in origins to the immediately preceding table in its world. Independently of some motivated way of filling out the 'qua table' condition so as to provide criteria for cross-world identifications of tables, there is no fact of the matter about which of the tables in worlds represent possibilities for the table on which I am writing. (And there is no need to suppose that the

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19. I think that this kind of example raises a general problem not satisfactorily dealt with in any discussion of it, viz. how can a thing with a real essence have only a proper part of its actual original matter essential to it? I think that the answer is that it cannot. As to what else could be essential to a thing with a real essence and as to why a table could not have such things essential to it see Chapter 5.

cross-world identifications made relative to a way of filling out the 'quatable' condition are matters of strict identity. For on the Nominal Essentialist view of things of a sort, modal predications are not about the essence of such things understood as parts of them which are wholly present in all and only the worlds which represent possibilities for those things. Rather, cross-world identifications are just ways of keeping track of which modal claims about those things we are prepared to accept.)

Nominal Essentialism seems right for complexes and for mere sums of cases in general. But it is wrong for basic cases and so for substances. These have a real essence which it is up to us to discover, not to invent or gerrymander for our own purposes.

### 3. Essence and Endurance

The upshot of Section 2 is that basic cases of kinds have real essences, i.e. parts of their objective natures which limit what properties they could have. Modal predications made of things with real essences can be understood as remarks about the ways in which such things have or fail to have properties. Real essences were contrasted with nominal essences. A thing has a nominal essence if facts concerning which properties it could have are determined not by its objective nature but by the conventions of cross-world tracing we are prepared to apply to that thing. It was suggested that it is very plausible to suppose that complexes have nominal essences.

Now, if we could establish that any sum of temporal parts which is not a space-time region has only a nominal essence then it would follow that basic cases of non-regional kinds are not sums of temporal parts. Since any perduring thing is a sum of temporal parts we could conclude that basic cases of non-regional kinds do not perish but rather endure, i.e. exist at successive moments without having temporal parts.

Any perduring thing is a sum of temporal parts; that is the nature of the thing. The question whether a perduring thing could have a real essence is the question whether some part of its nature is correctly understood as determining what properties the perduring thing could have and must have. There is an immediate obstacle to thinking this way about a mereological sum of temporal parts. It is difficult to see how any one of these temporal parts could be more important or central to the sum than any other. All the parts seem to be on a par so that all of them seem to have an equal claim to be essential parts of the sum. So either all the parts of the sum make up its real essence or none do, which is to say that it has no real essence.

As against this, one might suppose that the original temporal parts of perduring things have a special status. Although a perduring thing's history might have taken a very different turn after it came into existence, it might be thought that it could not have had a radically different origin.<sup>20</sup> So a perduring thing's actual and original stage might be thought to be essential to it even though its subsequent stages are not.

This suggestion turns out to be ultimately unsuccessful so far as locating a real essence for a perduring thing goes. It was argued at the end of Chapter 2 that the temporal stages of a perduring thing are either instantaneous or arbitrarily short-lived (i.e. as short lived as one wishes so long as they are still divisible and so temporally extended). It is a consequence of the suggestion that only origins are essential that the part of a perduring thing's nature which is supposed to comprise its essence is very short-lived indeed. It does not exist at times later than the thing's origin. How can it then constrain the properties had by later temporal parts of the thing? All that comes to mind is the possibility outlined at the end of Chapter 2. Parts of the initial stage of a perduring thing -- cases of fundamental material properties or kinds -- could endure and be part of later temporal parts of the perduring thing. Such cases might be the parts of a perduring thing's nature which constrain the properties it could have and come to have.

A little reflection shows that this is not so. It is hard to believe that any structured perduring thing is such that necessarily most of the cases

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20. This would amount to a sort of essential origins thesis for perduring things. On the necessity of origins see S. Kripke, Naming and Necessity (Harvard, 1980), pp. 110-115, N. Salmon, Reference and Essence (Princeton, 1981), chapter 7 and C. McGinn, "On the Necessity of Origins", The Journal of Philosophy, 73, 1976.

which originally constitute it constitute it at all later times at which it exists. For extreme longevity is always a possibility for a perduring thing. And among the long lives possible for any structured perduring thing are lives in which new cases of fundamental material properties or kinds gradually take the places of the original cases of such properties and kinds. Once such replacement is complete, none of the original parts of the perduring thing are still parts of it. On the hypothesis about the real essence of perdurers under consideration, the parts that then make up the perduring thing are not essential to it. After the replacement is complete we are left without any candidates to be essential parts of the perduring thing, parts which constrain what subsequent changes are possible for that thing.

The upshot is that if we suppose that the real essence of a perdurer consisted of some of its (original) cases, whether perduring or enduring, then we cannot allow that it survives the loss of those parts. Otherwise we would be allowing that it survives the loss of its essence, which is incoherent. However, it seems possible for any perdurer to survive the loss of such parts. So it is difficult to see how a perdurer can have a real essence of the sort in question.

Some philosophers have taken it that any mereological sum and so any perduring thing has (or would have if it existed) a real essence -- an essence consisting of all of its parts.<sup>21</sup> This amounts to Mereological Essentialism -- no sum of actual things could have had any parts different from those it actually has.<sup>22</sup> Mereological Essentialism implies that no perdurer could

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21. Cf. P. Van Inwagen, "The Doctrine of Arbitrary Undetached Parts", Pacific Journal of Philosophy, 62, 1981.

22. On Mereological Essentialism see R. Chisholm, "Parts as Essential to their Wholes", Review of Metaphysics, 26, 1973.

have come into being with matter even slightly different from that which actually and originally constituted it.

This is counter-intuitive; and it is only the beginning of the counter-intuitive results which follow from Mereological Essentialism for perdurers. The doctrine is at odds with such intuitions as (i) that a perdurer could have been longer or shorter lived and so could have consisted of more or less temporal parts and (ii) that some of the cases which comprised a perdurer's temporal parts might not have done so due either to the perdurer possibly undergoing some vicissitude, e.g. chipping or deformation, which it actually did not undergo, or to the perdurer possibly not undergoing some vicissitude which it actually did undergo.

The only perdurers for which Mereological Essentialism is plausible are space-time regions. Non-instantaneous space-time regions will have only sub-regions as parts. It does seem plausible to suppose that a non-instantaneous region could not have consisted of sub-regions different from those which actually made it up. However, I do not see any real chance for Mereological Essentialism as applied to non-regional perdurers.

Having failed to find real essences for non-regional perdurers we are not in a position to understand modal claims about perdurers as claims just about the relation between the real essence of the perdurer and certain properties. The alternative is to give a counterpart- or hydra-theoretic treatment of claims about perdurers. Non-collusive agreement about which properties are essential and which accidental to members of a certain class of perdurers is then to be explained not by our common knowledge of the real essence of the perdurer but rather by our tendency to adopt a certain scheme of cross-world tracing for perdurers in the class, a scheme which amounts to treating certain

features of the perdurers as more important than other features which they have.

Thus if we are inclined to suppose that every table is essentially not a poached egg, our belief that this is true is explained as the result of our tendency not to count anything poached egg-like as representing a possibility for a table. Relative to a counterpart relation constrained in this way, it is true that my table is essentially not a poached egg. However, on the counterpart-theoretic view of this remark, all the remark amounts to is a certain de dicto necessity, namely that necessarily no counterpart related to my table by such a constrained counterpart relation is a poached egg. Moreover, on the view in question, any bizarre modal remark about the table could be made true as long as a sufficiently unconstrained counterpart relation was invoked. The nature of the table plays a very limited role in determining the truth value of a modal remark on this view, most of the work is done by the counterpart relation or scheme of cross-world tracing.

Non-regional perdurers have only a nominal essence. Essentialist claims about them are to be construed as de dicto truths necessary in virtue of the nature of the perdurer and the counterpart relation or scheme of cross world tracing which we have adopted. Though we may have reason to adopt some rather than other counterpart relations when representing possibilities for tables this choice is not dictated by the nature of tables. For tables in particular and non-regional perdurers in general have no real essences.

However basic cases of kinds do have real essences. So no basic case of a non-regional kind is a perdurer. Such cases endure.

Basic cases of non-regional kinds endure, i.e. they remain numerically one and the same while they change or "receive (apparent) contraries". They have real essences which determine the essential and accidental ways in which

they do or do not have properties. Haecceitism holds for them. They are neither properties predicated of things nor particular characteristics (non-basic cases) exhibited by things. I conclude then that they deserve the name of substances.

## Chapter 5 -- Composites

### 1. The Limitations of Materialism

Consider what we shall call the total matter of a persisting material thing. It is to encompass all the matter which constitutes that thing over its lifetime. It can be thought of as a certain sum of cases of material properties and kinds.<sup>1</sup> As a first approximation, the sum should include those cases of material types which are at some place which the material thing occupies during some time when the material thing occupies that place. The sense of 'occupies' here is taken to be such that the regions bounded by the interstices of a material thing are not occupied by that thing. Consequently, the air molecules which are located inside a bottle at some time are not to be counted part of its total matter.

The cases of material types which are at some place which a material thing occupies at a time when that thing occupies that place include some cases which are not part of the total matter of the material thing. For among those cases are the space-time regions occupied by the material thing over its lifetime. These sum together to make up the total position of the material thing. The total position of a material thing is to be excluded from its total matter so that its total matter is the sum of all cases located at its total position minus its total position.

The concluding argument of Chapter 2 implied that at least some cases of material properties and kinds endure. Suppose that fundamental particles are

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1. These properties and kinds are material in the sense that they would be recognized by any correct physical theory. In this context a physical theory is any appropriate descendant of current physics and chemistry. Certain constraints must be placed on the appropriate descendant relation in order that this characterization work. On these, see J.J.C. Smart, "The Content of Physicalism", Philosophical Quarterly, 28, 1978.

among such enduring cases. Then the total matter of a typical material thing will include cases which have a life of their own outside the total position of the material thing. These cases will include those fundamental particles which constitute the material thing for only part of their lifetimes. The consequence to the effect that what was once part of a material thing's total matter is no longer part of it can be accepted. On the view we are interested in -- the view that a material thing is identical with its total matter -- it follows that it is possible for what was once part of the material thing to no longer be part of it. If we drop the tense and speak tenselessly of the parts of a material thing we get the odd result that part of a thing may be thousands of miles away from that thing. But this oddity is just the result of trying to speak of a time-relative relation -- being part of at a time -- in an atemporal way.

In Chapter 1 we allowed that there are cases of extrinsic properties, as it might be, a case of being an electron bound to the nucleus of a hydrogen atom. Such a case would overlap with but not be part of an electron bound to such a nucleus. Such a case would be located within the total position occupied by the hydrogen atom in question. It would be a case of a material property. It would therefore be included in the total matter of the atom. Hence the claim that a hydrogen atom consisting throughout its lifetime of a single proton, a single neutron and a single electron is no more than its total matter is not the claim that it is simply a proton, a neutron and an electron. Rather, it is the claim that it is an electron bound to a nucleus consisting of a proton bound to a neutron. The total matter of the atom includes cases of the relevant bonding properties summed in with the cases making up the proton, the neutron and the electron.

The claim that a hydrogen atom is its total matter is very plausible. This is because it is very plausible to suppose that all the causal powers of the atom are accounted for by the causal powers of the material cases which make up its total matter. That is to say, it is hard to think of a distinctive causal role played by the atom which is not merely the product of the causal roles of the material cases which make it up. A similar consideration applies to atoms in general and things made up only of atoms bonded together. It is difficult to see how their causal powers are anything more than the product of the causal powers of the cases of material properties which make up their total matter. So there is a strong prima facie consideration in favor of the position that any material thing is identical with its total matter.

As against this, there appears to be a purely general argument to the effect that this is impossible. For suppose that 'b' is a rigid designator for the total matter of a persisting material thing, which persisting thing is rigidly designated by 'a'. Then the hypothesis that a = b seems at odds with the intuition that

(1) a would have continued to exist even if its matter had been gradually altered so that the matter constituting it in the latter half of its lifetime was wholly different from that which actually constituted it in the latter half of its actual lifetime. b could not have undergone such an alteration.

For example, think of a ship that is actually burnt up with all its original planks intact. It could have had very different total matter. For it could have had all its original planks gradually replaced before being burnt up. Thus the ship is not identical with its actual total matter.

There is a sort of paradox here. For the general consequences of this apparently sound argument are unpalatable. Suppose that by manipulating base metals an alchemist brings into being a gold statue of a cat and then obliterates it. The total matter of the statue is made of gold and is cat-shaped and the statue is made of the same gold and is cat-shaped. If the statue and its total matter are distinct then an odd consequence follows. Consider some time  $t$  at which the statue exists. Then at time  $t$  just where the statue is there is a distinct thing made of the same matter and having the shape of a cat. In fact it seems indistinguishable in all respects from the statue of the cat. But anything indistinguishable in all respects from the statue of a cat is a statue of a cat. So at the time  $t$  there are at least two cat statues in the same place. But consider the second statue of a cat, the one introduced as the total matter of the first statue. Surely it cannot be identical with its total matter. But its total matter consists of gold at  $t$  and is cat-shaped at  $t$ . Is there then a third cat statue coincident with the other two at  $t$  and so on ad infinitum? We get this absurdity because the original statue has no causal powers over and above those had by its total matter. The statue is not a principle of change and remaining unchanged which organizes the exchange of matter between its matter and its environment. The statue is nothing over and above its total matter. Distinguishing it from its total matter on the basis of modal intuitions like (1) is therefore very implausible.<sup>2</sup>

The obvious way out of this paradox is to regard those material things which are plausibly identified with their total matter as having only nominal essences. Then an utterance of a token of (1) is true in the context of

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2. Contra S. Kripke in "Identity and Necessity" in Stephen P. Schwartz (ed.), Naming, Necessity and Natural Kinds (Cornell, 1977), p. 101, fn. 19.

utterance not in virtue of the distinct natures of the material thing and its total matter but in virtue of the distinct ways in which the author of the utterance refers to the material thing and to its total matter. These ways of referring serve to emphasize one rather than another counterpart relation or scheme of cross-world tracing. Such an utterance of (1) is true in virtue of the fact that although these schemes converge on one thing in the actual world -- the material thing which is none other than its total matter -- they diverge in other worlds. Thus the identity of a material thing with its total matter is admitted. What is denied is that modal predications such as '... could not have undergone such an alteration' leave open a purely referential position for a rigid designator. Instead, distinct though co-referential designators can bring with them different criteria for cross-world identifications. These associations can be cancelled or made explicit by the 'qua F' construction. Qua statue, the golden cat could have figured in a possible world with different total matter; qua total matter, it could not have.

Notice that this solution can apply more widely than to perduring things. Suppose, as was mooted at the end of Chapter 2, that all fundamental material property instances or cases endured. Then there would be real obstacles to supposing that anything structured out of such property instances or cases perdured. To take one of the worst problems: suppose a table is originally made up of a host of cases of fundamental material properties or kinds and it is perfectly preserved so that no interchange of matter or energy takes place between it and its environment. It is obliterated soon after it comes into being. Then the table is not a perduring thing. It cannot be decomposed into temporal parts because none of its parts have temporal parts. Let us call any sum which contains at least one enduring thing and things extrinsic to that enduring thing a composite. Now I think it is very plausible to suppose that

the table is the composite which is the sum of the enduring cases in question. Granted, the table could have had many parts not actually included in the composite. However, for reasons exactly like those given in the example of the golden statue it seems more plausible to employ the Nominal Essentialist's treatment of this remark in order to save the identity claim.

So far we have recognized that a thing has a nominal essence if it is a complex (Chapter 4), if it is a perduring non-complex (Chapter 4), or if it is a composite without a distinguished essential part. However a central claim of Chapter 4 was that basic cases of kinds have real essences. So for them, modal predications like those involved in (1) are concerned with ways in which they have or lack properties. And this in its turn is a matter of whether their real essences imply such properties. Hence we are owed an account of the relation between a case of a kind and its total matter which either explains why the analog of (1) for it and its matter is false or explains how the case can plausibly be taken to be distinct from its matter. For the Nominal Essentialist's way out is not available for cases of kinds.

Fundamental particles, even if they have no spatio-temporal parts, would still have cases of fundamental properties as parts. These parts summed together could be thought of as their total matter. If anything is a good candidate to be identical with its total matter it is a fundamental particle. So if a fundamental particle is to be properly regarded as a basic case of a kind its total matter must be essential to it and not able to change across possible situations.

However it is hard to see how Materialism -- the doctrine that a thing is identical with its total matter -- could be maintained for basic cases whose total matter is not essential to them. If there are such cases then there must be some way of explaining how it is that they are distinct from their

total matter. I now turn to my own tentative suggestion as to how this could be so.

## 2. Hylomorphism

When we argued that the golden statue of a cat was not different from its total matter we assumed that the statue was not "a principle of change and remaining unchanged", i.e. something different from its matter which explained just why its matter was organized in the way it happened to be and which governed the rate and means of the matter exchange between its matter and its environment. This assumption was plausible because it seemed clear that the causal explanation of why the matter of the statue hung together in the way it did over time could be given completely in terms of properties of material bonding, cases of such properties being included in the statue's total matter. For the statue and for inanimate material things in general, no principle of organization distinct from the thing's total matter needs to be invoked to explain the unity shown by that matter over time.

A quite modest anti-reductionist position about living things and, in particular, organisms could be developed in contrast to this account of inanimate things. The idea that there is a special kind of matter present in living things, a kind whose features cannot be explained solely in terms of the kinds of matter postulated in the physical sciences is known to be false. Organic compounds are made up of the same sort of matter as is found in inorganic compounds. However, it still may be that any adequate explanatory biological theory will have to recognize kind-specific principles of material organization in order to explain the kind-relative diachronic unity of organisms. The anti-reductionist element here is the supposition that unlike the diachronic unity of statues, tables and chairs, the unity that an organism shows over time is not explicable solely in terms of the mass effect of the bonding forces recognized by physics and chemistry.

One way of filling this anti-reductionist idea out is in the direction of Hylomorphism. On this view an organism is a composite of its total matter and a principle of organization which is a unified disposition to various life-functions. The interdependent intrinsics which make up such a disposition are the various capacities of the organism to function in ways characteristic of its kind, e.g., ingestion, assimilation, excretion, metabolic self-maintenance, locomotion, reproduction, sensory assimilation, mentation, etc.. The survival and operation of such a unified disposition requires the survival of a highly structured material basis -- the body of the organism. However, the operations of the disposition maintain the matter of the organism in its characteristic and highly articulated state. In this state, the matter of the organism has a structure which enables it to subserve the active operations of the organism, operations which on the Hylomorphic View are manifestations of the organism's unified disposition to life functions. Thus the disposition maintains matter in a structure sufficiently complex to sustain itself and its operations. This is the sense in which a disposition to life functions is self-maintaining.

The matter of an organism shows a striking diachronic unity as a result of the metabolic operations of the organism's self-maintaining disposition. Thus the persistence through time of an organism is to be explained by the persistence of its self-maintaining disposition to life functions. Of course, there will be certain sorts of mutilation of the body of the organism which the organism cannot survive. For certain sorts of mutilation will destroy enough of the material basis of the function of metabolic self-maintenance to prevent its continued operation. If this happens, the organism is then dying, i.e. ceasing to be matter organized by a disposition to life functions.

The function of metabolic self-maintenance is atypical among life-functions in this respect. An organism cannot survive the sort of mutilation that prevents the operation of this function. For its operation is the means by which the organism maintains itself as a living thing over time. Contrast seeing, for example. This is the operation of the capacity to see and an organism with that capacity can survive the mutilation of its organs of sight. Even so mutilated, there is a sense in which the organism retains the capacity for sight, albeit in the absence of its active operation. For that operation could be restored if new organs of sight were transplanted from an organism of the same kind or if prosthetic replacements for these organs were hooked up to the organism in the right way. Thus, when an organism survives such mutilations, what remains numerically one and the same is not the organism's matter, nor the operations of its life functions, but rather its unified disposition to those life functions. Nonetheless that unified disposition will only continue to survive if the organism is not mutilated to the point where there is no longer sufficiently complex matter to subserve the operation of the function of metabolic self-maintenance.

On the Hylomorphic View to be considered here, cases of biological kinds are self-maintaining dispositions to those life-functions characteristic of their kind. Organisms are composites of such cases and the matter organized by them. On this conception it is straightforwardly true that the nature of any organism is such that it might have had different total matter over its lifetime. For although it is essential to a disposition to life functions that it organize some matter or other it is not essential to any such disposition that it organizes the matter which it actually organizes. Which matter the dispositions actually organizes is a highly contingent affair depending on the environment with which it exchanges matter.

In showing how to think of an organism as something more than its total matter we have indicated what its real essence might be like. An organism is a composite of its total matter and the disposition to life functions which organizes that total matter. The disposition is a basic case of a kind. In identifying such a case across time and from possible situation to possible situation we thereby identify the organism with that case as a part. Such a case of a kind has a real essence which implies and excludes certain properties. And that real essence is also the real essence of the hylomorphic composite which has the case as a part. Just as the question of whether there are cases of kinds of material organization of the sort the Hylomorphist recognizes is an empirical one, the question of which of their properties are essential is an empirical one. But among the various capacities intrinsic to such a case, the capacity for metabolic self-maintenance stands out as a candidate to be an essential capacity. Nothing could be Fido in some possible situation unless it incorporated Fido's capacity to metabolic self-maintenance.

Since cases of kinds of material organization have real essences then, by the argument of Section 3 of Chapter 4, they endure. In general they deserve the name of substances. Thus a hylomorphic composite contains a substance as an enduring part.

### 3. Organism and Artifact

I suggest that thinking of organisms as hylomorphic composites does very well in bringing our intuitions about questions of identity over time for organisms into reflective equilibrium. Such an equilibrium is difficult to achieve because our intuitions in this area are subject to a number of distorting influences. As a result, those intuitions can be made to appear contradictory.

One distorting influence in this area is the flurry of fantastic cases which invite us to gloss over the distinction between material parts taken up into the life of an organism and material parts making up an artifact. Though artifacts, e.g. ships, tables, chairs, guns, etc., have a characteristic shape they lack a self-maintaining principle of organization and development which remains the same while their parts come and go. Being identical with their total matter they lack a real essence which would constrain the changes they are able to undergo, i.e., which would set a limit to such changes independently of our conventions of identification and re-identification.

Thus, for an artifact, the distinction between having its parts replenished and its being replaced by another thing of the same sort is vaguely bounded, open to conventional determination and so to various precisifications for various purposes. For example, whether the original gun of Little Caesar is counted the same gun as the gun assembled much later from parts scattered around his hideaway or is rather the same as the gun in his pocket which has been produced by continuous replacement of those parts may depend on such extrinsic matters as the laws of evidence in the state in which Little Caesar is tried. We can, after all, imagine the gun which was later assembled from the scattered parts being presented as exhibit A -- according

to the ballistics reports, the very gun which Little Caesar used to plug his rivals.

The example of Little Caesar's gun is on all fours with the example of the ship of Theseus. The ship leaves port, it sails across the sea, the planks which make it up are gradually replaced so that it arrives at its destination made up of planks none of which made it up when it left port. Of course this very way of describing the situation embodies the very natural intuition that the ship which left port arrives at its destination. But this intuition can be thrown into some doubt by filling out the example by supposing that as the original planks were discarded they were collected, eventually to be put back together into a ship exactly like the ship of Theseus when it left port. Surely the ship consisting of the original planks has some claim to be the original ship. Some claim yes, but the dominant intuition here is that the ship spatio-temporally continuous with the ship of Theseus is the ship of Theseus despite the fact that it has none of the original planks. After all, loss and replacement of planks is the usual thing in the normal life of such a ship.

Notice that "the normal life of such a ship" is properly glossed as "the normal purposes to which we put such ships". The normal life of such a ship is not dictated by the nature of such ships. For suppose that the ship of Theseus had become a prized exhibit. A curator in the museum in which it is stored covets the ship. He forms a plan to steal it. Every evening, when he is the last to leave, he replaces one plank in the ship with a replica he has made at home. In this way he gradually acquires all the original planks which he then puts together into a ship of the same form as Theseus's ship. Surely he could be prosecuted for stealing the ship of Theseus. This implies that the ship of Theseus is the one the curator built up in his back yard. Yet

this intuition is at odds with the original intuition that the ship spatio-temporally continuous with the ship of Theseus is the ship of Theseus. As in the case of Little Caesar's gun, practical interests, and not just the nature of the artifact, determine which judgement of cross-time identity is reasonable.

Corresponding to the example of the ship of Theseus one could develop the example of the body of Theseus. While Theseus is alive his cells are gradually replaced by bionic units which show just the same input-output functions as the cells they replace. Theseus gradually becomes a bionic man. However his original cells are kept alive and finally reassembled into a living body with exactly the same material constitution as the body of Theseus before he went bionic replacement. Are we still so sure that Theseus survives as the bionic man?

The Hylomorphist will have two remarks to make about such an example. First he would offer a cautionary word about the fantastic nature of the example. Since on the Hylomorphic View the nature and essence of an organism is a matter of a posteriori discovery, imagination will be a poor guide to what is possible for an organism. One must therefore maintain a sober sense of possibility in the face of such imagined examples. It is just not known whether it is possible to build up an organism by assembling cells. Organisms grow; they are not assembled.

Secondly, suppose that one waived this worry and had, as I have, the intuition that Theseus survives as the bionic man. Then it would be a grave mistake to suppose that just because we can imagine parallel examples for artifacts and organisms parallel claims about identity over time must be made. In the example of the curator trying to steal the ship of Theseus, extrinsic matters such as the use to which the ship was being put led us to conclude

that the ship constructed from the original planks was the original ship. Here, practical interests motivated one rather than another extension of our conventions for describing facts of material continuity and dependence in terms such as 'this is the same ship as the ship of Theseus'. However it is very bizarre to say parallel things about the example of the body of Theseus. Suppose the bionic man is sent off in a space-ship to Mars and the assembled organism is on Earth. Could it really be a matter of convention as to which one is Theseus? Suppose someone formed the plan to smuggle Theseus out of the country cell by cell. I think our reaction to this would be that Theseus just can't be smuggled out in this way. And this is not a matter of which conventions of re-identification suit the use to which we are putting Theseus. Rather it is a matter of the nature of Theseus. He is not the kind of thing which can be transported in this way.

The Hylomorphic View captures this intuition. The real essence of Theseus rules out this surviving decomposition into his individual cells. For once the decomposition has got to a certain point there will no longer be enough articulated matter to subserve the operation of Theseus's disposition to metabolic self-maintenance. The self-maintaining disposition which makes Theseus a living thing will have ceased to exist. Assembling the cells into the form of a man could at most produce an organism with a self-maintaining disposition of the same kind as Theseus's. But this would be no more Theseus than a clone of him would be.

The Hylomorphist will similarly dismiss the alleged possibility of an organism's surviving the so-called "teleportation" process described in Chapter 3. If one cannot survive decomposition into one's constitutive cells a fortiori one cannot survive decomposition into one's constitutive atoms or sub-atomic particles. Beaming my particles to a destination where a person

just like me is made from them is not a way of transporting me. My disposition to the life functions characteristic of my kind is destroyed and duplicated by such a process. So at best, "teleportation" is a way of replacing me by a duplicate.

The Hylomorphic View allows that there is something in the nature of organisms which does encourage a parallel with artifacts in the matter of identity over time. Like artifacts, organisms have material parts. The material continuities associated with them over time can hold to varying degrees. On the Hylomorphic View the material continuities shown by an organism over time are evidence for the survival of a disposition which is a large part of the causal explanation of those continuities. Some of the material effects of an organism's disposition to life-functions may continue to be seen after the organism is dead and so after the disposition has ceased to be, e.g. the growing of nails and hair after death. So far as the body of an organism goes, there may be no radical discontinuity associated with the ceasing to be of its disposition to life functions. The body's operations may just gradually diminish until there are none at all which are characteristic of a living thing. Thus there will be a real evidential obstacle in the way of specifying the exact time at which an organism dies. However, on the Hylomorphic View, it is just wrong to dramatize our ignorance by saying, for example, that there is no fact of the matter as to whether a patient who has undergone significant cell by cell mutilation is dead or not. There may be no fact of the matter as to just when an artifact ceases to exist as a result of gradual mutilation. For there is <sup>h</sup>nothing more to the persistence of artifacts than the holding of material continuities and dependencies. Not so with organisms. There is always the further fact as to whether the organism's disposition to life functions exists or not.

The contrasts between organisms and artifacts in the matter of identity over time also hold between organisms and non-artifactual inanimate things: stones, waves, waterfalls, planets, mountains, etc. For these things also, matters of identity over time can seem to turn on more than their nature. This is just what we would expect given the argument of Section 1. For these things are identical with their total matter and so have no real essence which limits their possibilities independently of our habits of re-identification.

#### 4. Sanity Restored

As well as explaining the important difference between organisms and non-living things in the matter of identity over time the Hylomorphic View promises to sober up discussions of personal identity. I shall close by noting three of its salutary implications: first, that the imagined examples of people surviving fission are very dubious; second, that my experiences are necessarily, uniquely and wholly mine; thirdly, that there is no sound criticism of our parochial biases forthcoming from the correct theory of personal identity.

Unlike amoebas we are not naturally fitted for fission. Even if we were, it would not follow either that the pre-fission person survives as both the post-fission people (the Close Enough Continuer View) or that if one of the post-fission people had not developed then the pre-fission person would have been identical with the remaining post-fission product (the Closest Continuer View). Neither of these views is plausible for amoebas or for anything which splits in the way they do. In amoebic fission the material basis of the life functions of the parent amoeba swells, duplicates and divides. As a result two new daughter amoebas are produced. If one side of the fission process fails we do not say that the parent amoeba is the sole daughter amoeba. Rather we say that amoebas reproduce by fission and that in such a situation only one amoeba has been generated from the parent amoeba.

What about artificial fission of people as in the philosophers' examples, e.g. the transplanting of a patient's hemispheres into living yet brainless bodies? On the Hylomorphic View not much sense is to be made of the claims of the Closest Continuer theorist or of the Close Enough Continuer theorist in such a case. If there could be living though brainless bodies then on the Hylomorphic View each such a body would be an organism with its own

disposition to life functions. Such bodies would not have sufficiently articulated matter to subserve the operation of the function of mentation but they would retain the disposition to that function in the way in which a man with his visual system ablated retains the disposition to the function of seeing even though he no longer sees. Transplanting a brain or a half-brain into a living but brainless body may not be physically possible. But if such transplanting could succeed then on the Hylomorphic View this implies that the transplanted brain could be integrated into the functioning of the rest of the organism. It becomes the material means by which that organism thinks, just as a transplanted heart becomes the means by which the organism into which it is transplanted pumps blood. The transplanted half-brain or brain is no more the functioning of the organism from which it was transplanted than is the functioning of a transplanted heart the functioning of the organism from which that heart was transplanted.

On the Hylomorphic View there is an important difference between any organ, the brain included, and any organism, no matter how mutilated. The latter has and the former lacks a unified disposition which includes the capacity for metabolic self-maintenance. We must not think of the brain as if it were a little organism with a life of its own, needing a body only as a means of executing its will and acquiring information. For this is to treat the brain as a pilot in a ship -- a kind of Materialist Cartesianism which makes the rest of the body a responsive puppet. A saner view is encouraged by Hylomorphism -- the functioning of my brain is my brain-functioning only so long as that functioning is the manifestation of my disposition to life-functions. If my brain were successfully transplanted into your living yet de-brained body then ipso facto it would be taken up into the life of your body. Its functioning would be your functioning.

Of course, it is far from clear that brain transplanting is possible in general. My brain may not be able to function in any of the ways which your living body can tolerate. But if the transplanting is successful, then on the Hylomorphic View the mental operations which are subserved by the brain in your body are your mental operations no matter how much they bear the character and stamp of my earlier mental operations. So I would not survive when only my brain or half-brain survived and was transplanted into your body.

I take it that this goes against the dominant intuition which philosophers have concerning brain-transplanting. Only part of that intuition can be explained by the acceptance of Materialist Cartesianism -- the view that we essentially are our brains. There is another distorting and less theoretical influence which it is important to isolate if our intuitions about personal identity are to be properly assessed. I call this distorting influence the executor effect.

When presented with a puzzling example like the example of brain-transplanting an intuition to the effect that I would survive the process described is an intuition that the process would not involve my death. In making such a judgement I naturally look for the signs of death, its normal concomitants, the losses it typically involves. A puzzling example is liable to distort our intuitions if it includes a process which involves death but not its usual concomitants.

Death always involves the final defeat of one's ego project -- that one continue to exist -- and of one's personal projects. Invariably, under normal circumstances it also involves the defeat of many if not all of the corresponding impersonal projects. There is no one to take just my place in the world after I die, to do the things I would have done in just the way I would have done them. Now it is very difficult to formulate what kind of loss

it is when my ego project is finally defeated. It is not in any way a loss which I will experience or undergo. Similarly it is difficult to articulate just what value comes to an end or ceases to be able to be attained when my personal projects are finally defeated by death. The personal, subjective loss associated with our death is very difficult to formulate and so difficult to fix as the object of our fear when we fear death. (This has led some to say that it is not a loss, thereby, I think, capitulating to Neutralism.)

Either way, in fearing death it is easier to fix on the impersonal loss. When I die there will be nobody to care for my friends and familiars in the way I can, nobody to cherish the things I do in quite the way I do, no one to make quite the contributions I could have made in quite the way I could have made them. Here although the first person is used, the loss being anticipated is nonetheless impersonal -- there will cease to be a very good executor of my impersonal projects when I cease to be. That certainly is a loss if the pursuit and success of those projects is indeed valuable. So the fear of the loss associated with one's own death takes as its dominant object not pure extinction, for this is something difficult to comprehend as a loss, but its invariable concomitant -- the loss of a very good executor of one's impersonal projects.

A fortiori, the death of another not intimately related to us will seem to us to be a loss just because there ceases to be that person who was a very good executor of his own impersonal projects. Here again our sense of the loss of death takes as its dominant object the usual concomitant of death. This is a familiar feature of many of our mental sets formed in the presence of regularities such as the fact that when a person dies there ceases to be a

very good executor of his impersonal projects. We think of one thing as the manifestation of the other, react to it as if it were the other.

If this is correct, then we should expect that when we are presented with a bizarre case in which there is a very good executor of a dead person's impersonal projects we should be inclined to suppose that the loss associated with death has not taken place, so that death has not taken place. We will be inclined to suppose that the person survives as his executor.

I suggest that such an "executor effect" is influencing our intuitions in the brain-transplanting example. If the person who lived on with my brain and your body happened to be very committed to your projects and not at all to mine we would have little or no inclination to say that I survive as that person. Yet the usual supposition embodied in the description of such examples is just the opposite. Because of the causal powers of the brain, it is supposed that a person who lived on with my brain and your body would be highly committed to my projects and not to yours. But then we should suspect our intuitions about such examples. Perhaps they represent an illegitimate overgeneralization from the normal run of things.

Having said this it is important to point out that if I care about my impersonal projects I do have good reason to care for some future very good executor of those projects even if he is not me. For with him go the hopes of my impersonal projects. Indeed I have reasons to identify with him, i.e. to care for him in a way similar to the way I care for myself and for similar reasons. No wonder then that I should tend to think of his survival as my survival. No wonder <sup>e</sup>than that philosophers can get a long way in arguing for the importance of mental continuity in personal identity and the non-necessity of bodily continuity. For mental continuity of the right sort between me and some future person will guarantee that he is a very good executor of my

impersonal projects. And this will be so whether or not he is the same organism as me. But this whole direction of thought which dominates the contemporary discussion of personal identity is thrown into doubt if there is such a thing as the executor effect.

There is a corrective against the executor effect. The possibility that I should have more than one future very good executor of my impersonal projects serves to remind us that having a future very good executor is one thing, surviving another. Lewis, Nozick, Parfit, Perry and Shoemaker have each exercised their ingenuity to make it seem legitimate to ignore such a reminder. In doing so they have produced opposing accounts of what the facts are when a person has many future executors. The proliferation of theories in this way can itself be the sign of a mistake. As I tried to show in Chapter 3, this suspicion is reinforced when we look at the details of these theories.

Finally and briefly, how does Hylomorphism fare with respect to the objections brought against these theories in Chapter 3?

On the Hylomorphic View, an organism's experience, like all of its mental activity, is a manifestation of its unified disposition to life functions. For on this view, sensory assimilation, no less than digestion, is a life function. There is a non-contingent connection between a disposition to life functions and its manifestations. Consider the fragility of a particular glass. That case of a determinate sort of fragility could not be manifested by the breaking of a second glass unless the dispositional case in question is identical with its material basis and that material basis was somehow incorporated into the second glass. But this possibility of the operations of one thing manifesting the dispositions of a different thing does not arise for dispositions to life functions. For such dispositions were introduced as distinct from their material bases. If my liver is transplanted into another

person then the functioning of my liver in that person is not my liver-functioning. The functioning of my liver in him is not a manifestation of my disposition to liver-functioning, but a manifestation of his disposition to liver-functioning. In general, none of the operations of another living thing could be the manifestations of my disposition to life functions. Just as there is a non-contingent connection between my digestings and my disposition to life functions there is a non-contingent connection between my experiences and my disposition to life functions. My experiences manifest that disposition. That is what they essentially are -- manifestations of that disposition. Thus they could not be had by another organism, for if another organism were to have them then they would be manifestations of its disposition to life functions. Moreover, the idea of an experience had by no organism is an absurdity. For this would be a manifestation of a disposition to life functions which manifested no such disposition.

What about two organisms sharing an experience? Two Siamese twins could be connected at the wrist and so could share a common site of bodily disorder. But this would not be sharing an experience in the relevant sense. Even if the area of overlap were higher up in the nervous system, e.g. at the sensory cortex, this could still be a mere economy in each organism's use of organic matter. The organisms would have common matter subserving the operations of their respective capacities to sense. But on the Hylomorphic View there is no step from this to the conclusion that the sensory operations of the organisms are the same. For those sensory operations are not mere material changes. They are manifestations of dispositions, manifestations which involve but are not identical with material changes. Thus, on the Hylomorphic View, even if it is possible that two distinct dispositions to life functions manifest themselves by means of the same matter, this is not to say that these

manifestations are the same. Hence even if it is possible for Siamese twins to be connected at the sensory cortex this is not to say that their sensory operations or experiences would be the same. At most, those operations would involve the same material changes.

An analogy may help here. Suppose that at the 1984 Republican Convention Fred and Ned between them manage to raise high a banner which has written on it "Nixon for President. Reagan for Vice President". Fred is known as a maverick and it is recognized that he did this because he really did intend to support Nixon whom he believes should be exhumed from the political graveyard. However, Ned is widely known as a severe critic of the Reagan camp's use of the Carter debate notes, and as a man who thinks of this as a Watergate-style dirty trick. Only Fred fails to recognize that in raising the banner Ned intends to discredit Reagan. Here by means of the same material change, Fred and Ned manifest different attitudes and so perform different acts. Moreover even if Ned had manifested the same type of attitude as Fred in raising the banner, there would still be Fred's supporting Nixon and Ned's supporting Nixon -- different tokens of the same act-type associated with the same material change.

The Hylomorphist thinks of the Siamese twins who share a common brain event but who have different token experiences in a similar way. By means of the same material change they manifest different dispositions. Hence the Hylomorphic View rules against the alleged possibility of two organisms having the very same experience. A fortiori, it does not allow as a possibility a single experience partly had by one organism and partly had by another organism.

How does the Hylomorphic View fare on the matter of self-concern? The Complex View supported Neutralism because as a view of persisting people it

made the difference between a person's surviving and his being replaced by a duplicate turn on facts not worth caring about -- facts about causal connections of specific sorts. Thus a person's ego project could only be represented by the Complex View as a bizarre preference in favor of one among many possible ways of securing mental and physical continuity. None of those ways considered in themselves seem especially distinguished. So a justification seems wanting for a very strong preference in favor of just one of these ways.

To make the problem vivid suppose there are two ways in which we could get a person with a nature just like mine to appear in Sydney. I could travel there or I could be put into a "teleporter" with a "receiving" station in Sydney. Suppose that I would survive the first but not the second. Knowing this, I naturally have a very strong preference for travelling, not because I think that it offers a better chance of mental and physical continuity and I care about that but because I just care about my survival independently of caring about mental and physical continuity. On the Complex View this can only be caring about one sort of pattern of causation in the world rather than another sort of pattern even though those patterns would produce the same results. The patterns of causation in question are just patterns of counterfactual dependence between cases. Why should I care about the sort of counterfactual dependencies that hold when I fly and don't hold when I get into the so-called teleporter?

Thus there is a lever for the Neutralist provided by the Complex View. Self-interested concern, which we ordinarily do take for granted, turns out to be just like something we ordinarily don't take for granted -- a powerful preference for a certain sort of causal pattern over a causal pattern of another sort independently of any preference for the results produced by the

first over the results produced by the second. This is the sort of preference for which we ordinarily want a justification and for which there seems to be no justification.

No such lever is provided for the Neutralist by the Hylomorphic View. On that view my ego project comes down to my caring that this disposition to life functions -- the one that I am -- endures into the future. But that makes rather good sense doesn't it? That disposition is a rich and variegated thing, the thing whose organized nature is manifested by all my activities. Surely I am justified in caring about it. Why don't I extend this same concern to a duplicate of the same nature so that I come to think of 'teleportation' as being as good as travelling? I just don't; but I do not see this very common attitude as lacking any justification which it needs. Of course, the Neutralist who denies that there could be a value for me in my survival which is not to be found in the survival of a duplicate will find my preference for travelling odd. But he has no argument for the sort which was provided for him by the Complex View. On the Hylomorphic View caring about the difference between me and a duplicate is just caring about the primitive difference between me and a duplicate. It does not come down to caring about a difference the caring for which ordinarily requires some further justification.

The Hylomorphic View is advanced as a tentative hypothesis. Its virtues are manifold. It avoids the absurdities of the Complex View in the matters of experience and self-concern. It does not make being alive or being dead a matter of convention, an extrinsic matter or a matter of degree. It encourages us to maintain a sober sense of the possible changes that living things can undergo. It provides an alternative to Materialism and to the

Complex View which does not involve the postulation of Cartesian egos, bare haecceities or bare particulars.

However, a real defence of the Hylomorphic View would involve showing how basic cases of kinds of organization understood as particular dispositions to life functions are indispensable in biological explanation. In such an investigation metaphysics would be playing one of its proper roles, as the handmaiden of biology and the philosophy of biology.

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