

PROPERTIES, BODIES, AND MINDS: AN EXAMINATION OF SYDNEY SHOEMAKER'S METAPHYSICS*

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I. Introduction

For over 25 years, Sydney Shoemaker has been developing an intricate, powerful, and highly original metaphysical system. It consists of tightly interwoven theories of properties, causation, laws of nature, mental realization, material constitution, and persistence through time. His metaphysics has a breadth and degree of systematicity rivaled, in our day, by very few.¹ It deserves, and repays, the closest examination.

I begin by exploring, in section II, the finer points of his metaphysics of properties and the persisting objects that have them. Shoemaker holds a “sparse” theory of properties: not just any old satisfiable condition doth a property make; *genuine* properties must play a special role in causation, and in the determination of objective

* The present essay began as a commentary upon Shoemaker's “Realization, Micro-Realization, and Coincidence” (henceforth, RMRC; a list of the abbreviations I introduce for frequently cited papers may be found at the end of this essay), delivered at Brown University's memorial symposium for Roderick M. Chisholm, in November of 2000. RMRC was published in *Philosophy and Phenomenological Research* 67 (2003), pp. 1-23. Shoemaker's paper was a very fitting contribution to a symposium dedicated to the memory another great systematic metaphysician.

¹ At the memorial symposium, I added: “One of the chief rivals would be the metaphysics of Roderick Chisholm, who did so much to bring systematic metaphysics back to center stage”.

similarity. His theory of properties — and of the realization of mental properties by physical properties — appeals to the notion of a *conditional causal power*. Because properties are “individuated” by their causal powers, the laws of nature turn out to be necessary truths. Because these powers have implications about persistence conditions, Shoemaker claims that many of the genuine properties of an object could only be exemplified by things with the persistence conditions peculiar to that sort of object. In sections III and IV I examine this doctrine. In III, I spell out what Shoemaker means by “persistence conditions” and “sortals”. Shoemaker believes that there may be coincident objects, made out of the same matter, but distinct in virtue of falling under different sortals and having different persistence conditions. Since some properties are “internally related” to persistence conditions, coincident objects are guaranteed to differ from one another in their properties, in principled ways. Section IV expands upon Shoemaker’s distinction between “thick properties” (the ones that imply persistence conditions, and distinguish coincidents) and “thin properties” (the ones that do not). I offer a Shoemaker-inspired explanation of the tight connection he posits between thick properties and persistence conditions. In section V, I find problems with Shoemaker’s argument against “reductionism” about identity through time; and I assess the cost to Shoemaker’s program if it fails. I conclude, in section VI, with a discussion of (i) Shoemaker’s recently modified functionalism, (ii) his views about mental causation, and (iii) a criticism of his claim to have answered the objection that, on his view, there are “Too Many Minds”. According to Shoemaker, the physical properties that realize mental states in a human person are thick properties, ones that cannot be exemplified by the human animal or physical body with which the person is (on his view) coincident. He supposes that this

allows him to deny that the animal and body with which I coincide must be happy or sad if I am. I argue that, given his functionalism, each must be happy or sad if any of them is.

There is a logical progression behind this seeming hodge-podge of problems and theories; and more unity to the essay than the description of its contents might suggest. In general, Shoemaker's views about the topics discussed later on depend upon positions discussed earlier. The theory of properties and their causal powers is at the heart of his metaphysics, and it is given more work to do in every section; new features will be added to the theory of properties as more aspects of his system are explored, and these new features will play a role in his approach to still further problems.

The essay is often tightly focused on the finer details of his system; but occasionally the camera "pulls out", in an attempt to see Shoemaker's metaphysics as a whole. From this vantage point, elements of his system that might at first have appeared to be unrelated can be seen to support one another in crucial ways — or, less optimistically, to stand or fall together. His arguments do not always convince me, and I find what I take to be serious problems for his combination of views. But the scope and richness of his metaphysics is indeed impressive, and I will not be surprised to learn that many of the problems I raise can be answered from within its perspective.

Most of this paper was completed in 2000, first as a commentary on a paper Shoemaker delivered at Brown University, and then as notes for a seminar he was kind enough to visit at Syracuse University. The only part that is substantially changed is section V. After struggling with the "spinning disks argument" for months, I finally gave up and set the paper aside. Coming back to it, I have tried to improve my discussion, and also to take into account Shoemaker's recent book, *Physical Realization* (Oxford:

Oxford University Press, 2007) (henceforth “PR”), which touches upon all the topics I addressed in the original version. Although there are differences of emphasis in PR, and slight changes of terminology, the book did not substantially modify the aspects of Shoemaker’s metaphysics that were relevant to the essay.

One more introductory word about structure and strategy: In the course of exploring Shoemaker’s commitments, I single out a number of theses for special treatment, displaying them as propositions (1) through (6). They are not always the most important or striking doctrines at issue, and the greater attention to their logical structure may seem unjustified. But they provide the premises from which the rather more startling conclusions (7), (8), and (9) are eventually derived, in section VI; so it is worthwhile getting clear about them as they arise.

II. Properties and Causal Powers

Properties Individuated by Conditional Causal Powers

I begin with an explication of the thesis that properties are “individuated by” the conditional causal powers conferred, raising some questions about the thesis that will prove important in the sequel. Shoemaker is interested in what is often called a ‘sparse’ theory of properties: the properties of a thing are what give it its intrinsic nature — a purported “property” is not a *real* or *genuine* property if it can be gained or lost by an object while the object remains intrinsically unchanged.² His theory individuates

² For a discussion of sparseness and related notions, cf. Theodore Sider, “Sparseness, Immanence, and Naturalness”, *Noûs* 29 (1995), pp. 360-370.

properties by their causal powers; and, since extrinsic “mere-Cambridge” properties would seem to be causally impotent, the theory excludes them from the category of real properties.³ Shoemaker’s account does not, however, constitute an *analysis* of the notion of a real or non-Cambridge property, since its formulation makes free use of the target notion of a non-Cambridge property. Its aim is instead the “charting of internal relationships” among such concepts as *property*, *causal power*, *change*, and *similarity*.⁴

Shoemaker’s claims about the “individuation” of properties in terms of their causal powers depend upon his definition of what it is for something to have a *conditional causal power* (for short, a “CP”).

(D1) x has power P conditional upon possession of properties in the set Q =df x has some property R such that having the properties in Q and having R is causally sufficient for having P , but having the properties in Q by itself is not causally sufficient for having P .⁵

³ As Shoemaker points out, requiring that a property confer causal powers does not automatically insure that one’s theory of properties is “sparse”, or that one has picked out the intuitively more natural properties. Grue seems to have all its potential for causal impact trumped by the work of blue and green; but one might wonder whether there is an entirely distinct family of properties with respect to which grue has its own proper causal relations, properties threatening to trump the causal impact of blue and green. See Shoemaker, “On What There Are”, *Philosophical Topics* 16 (1988), pp. 201-223.

⁴ See “Causality and Properties” (henceforth C&P) reprinted in his *Identity, Cause, and Mind* (Cambridge: Cambridge University Press, 1984), pp. 206-233; esp. p. 222. See also “Causal and Metaphysical Necessity” (CMN), *Pacific Philosophical Quarterly*, 79 (1998), pp. 59-77.

⁵ C&P, p. 212; see also RMRC, pp. 1-8, esp. p. 2, note 2. Strictly speaking, in C&P Shoemaker only asserts that the definiens of my (D1) is a sufficient condition for the definiendum. I am assuming it is also

A favorite example is that of an object x with the power P to cut wood conditionally upon its also having properties Q that include *being made of steel* and *being knife-sized*. The property R in virtue of which x has the power to cut wood might be *being knife-shaped*. Another example would be the “power” (or, better, “passion”) of being malleable conditionally upon being at a temperature of 100° F, which a thing might have in virtue of being made of wax.⁶

The strongest claim to which Shoemaker is attracted is the following: “what makes a property the property it is, what determines its identity, is its potential for contributing to the causal powers of the things that have it.”⁷ The CPs associated with a property are, as Shoemaker says, the “forward looking” causal features of the property; so the thesis can also be stated in this way: “properties can be individuated solely by their forward looking causal features”.⁸ The claim about “individuation” here is very strong; it is not just the *de dicto* assertion that, necessarily, property P is identical to property Q iff P and Q confer the same CPs. Compare the case of someone who believes in such things as “places”, and supposes that, necessarily, objects x and y are identical iff x and y occupy the same place; the person might also suppose that, in some possible worlds, x occupies place a and y occupies place b , but that in others it is the reverse. It is

necessary, and that Shoemaker is offering a stipulative definition of the technical notion of a conditional causal power. Not much hangs on this, so far as I can see.

⁶ C&P, p. 223.

⁷ C&P, p. 212.

⁸ RMRC, p. 2, note 2.

clear that Shoemaker is making a stronger sort of claim about the relationship between properties and CPs:

According to the theory of properties I am proposing, all of the causal potentialities [i.e., CPs] possessed by a property at any time in the actual world are essential to it and so belong to it at all times and in all possible worlds.⁹

Shoemaker's strongest claim about the essences of properties amounts, then, to this:

- (1) If F is the same property as G , then, for all worlds w and w^* and times t and t^* , x has F at t in w and y has G at t^* in w^* iff, for every power P and set of properties Q , x has P conditionally upon possession of properties in the set Q (at t in w) iff y does (at t^* in w^*).¹⁰

He recognized, very early on, however, that (1) might be too strong; that the claim might need to be weakened to allow for the possibility of distinct properties that, though they confer the same powers, result from different conditions. Shoemaker seems not to

⁹ C&P, p. 222.

¹⁰ Elsewhere, I have raised objections to Shoemaker's arguments for (1); see my "Shoemaker's Argument for his Theory of Properties", *Facta Philosophica*, 2 (2000), pp. 271-290. For reasons mentioned there, I find the thesis somewhat attractive nevertheless.

be entirely sure such a weakening of (1) is needed.¹¹ But supposing it is, he will say that what is impossible is for two properties to be associated with all and only the same CPs and *also* be such that all and only the same circumstances are causally sufficient to give rise to their exemplification.¹² I shall generally neglect this complication here, and assume that (1) is true as it stands.

CPs and the Necessity of the Laws of Nature

More can be learned about the character of properties and their associated CPs by examining his claim that (1) “implies that the laws about the effects of instantiating the various properties are metaphysically necessary.”¹³

To the extent that causal laws can be viewed as propositions describing the causal potentialities of properties, it is impossible that the same properties should be governed by different causal laws in different possible worlds, for such propositions will be necessarily true when true at all.¹⁴

The idea here seems clear enough. Shoemaker assumes that many, if not all, of the laws of nature can be expressed as statements about how an object’s having such-and-

¹¹ In footnote 2 of RMRC (p. 2), considering the alleged counterexample to (1) that would be posed by two properties sharing all the same forward looking causal features, he adds, parenthetically, “if it really is a possibility”.

¹² See the postscript to C&P, pp. 232-33; and CMN, pp. 63-68.

¹³ CMN, p. 68.

¹⁴ C&P, pp. 222-23.

such properties in so-and-so conditions causes some thing (either that object or another) to have certain properties. Causal necessities that resist such an analysis need not (so far as his argument goes) be species of metaphysical necessity. So, if the laws that can be expressed in terms of properties and powers of objects did not cover a very wide range of important cases, it would be misleading for him to say that, on his view, “causal necessity is just a special case of metaphysical necessity”.¹⁵ He must, then, suppose that all or nearly all of the laws of nature are, or follow from, facts about what happens when objects with certain properties are placed in various circumstances.

Laws governing the ways objects change provide a natural application (though the derivation of laws from facts about properties and CPs had better work for much more complex cases as well, including cases that do not merely involve a change in a single object). Suppose there is a law L having something like the following form: if anything is F in circumstances C , it is G for a certain period thereafter. How would the necessity of this law-statement follow from facts about the CPs conferred by properties? By (1), it is essential to F that it confers upon things that have it the powers it does so confer; and, if indeed L is a law of nature, then one of these associated powers will be *the power to acquire G in circumstances C* . So, necessarily, anything exemplifying F in circumstances C acquires G ; i.e., L is necessary. This can be repeated for every lawful connection between having F in certain circumstances and the effects that follow. So every law involving F and its results turns out to be necessary.

The proposed derivation of necessary laws from (1) depends upon the fact that powers have characteristic manifestations and manifestation conditions — they are

¹⁵ CMN, p. 61.

powers to do certain things, or to acquire certain properties, under such-and-such conditions. As Shoemaker says: “A thing’s having a power *simpliciter* [rather than merely *conditionally*] is a matter of its being such that its being in certain circumstances, e.g., its being related in certain ways to other things of certain sorts, causes (or contributes to causing) certain effects.”¹⁶ The law that *F* leads to *G* in *C* could be derived from the essential connection between *F* and *F*’s powers only because one of these was assumed to be *the power to acquire G in C*. For the derivation to work for *all the laws* in which a property figures, the CPs conferred must cover *every* eventuality, every possible set of conditions that could lead to any one of the possible effects of the property in question. The CPs associated with a property such as having mass of one kilogram will, then, be extremely specific and complicated, making allowances for every possible set of conditions a thing with a mass of one kilogram could get itself into.

Another fact that emerges from the connection posited between properties and causal laws is that CPs must be assumed never to “float free” of properties; that is, a CP is never exemplified in the absence of some property that confers it. I do not know of a place where Shoemaker says precisely this. But suppose there are CPs that are conferred by no property — for example, suppose that everything with some property *F* has a collection of free-floating CPs, and that these CPs underwrite the law-like generalization that *F*-things always cause nearby objects to acquire some property *G*. Since these CPs are not conferred by *F*, the law-like generalization that *F*-things turn nearby objects into *G*-things is merely contingent; if that generalization is the closest thing there is to a law

¹⁶ “Realization and Mental Causation” [RMC], in Carl Gillett and Ernest LePore, eds., *Physicalism and its Discontents* (Cambridge: Cambridge University Press, 2001), pp. 74-98; quoted sentence appears on p 77.

governing the causation that occurs when F -things cause objects to acquire G , the claim to have derived the necessity of the laws of nature would be a sham. Assuming, as Shoemaker does, that his necessary laws are propositions describing the CPs associated with properties, there will be no laws — and *ipso facto* no necessary laws — about the causal interactions of things that have these G -generating CPs. Shoemaker seems, then, to be making the very natural assumption that the causal similarities among things that share CPs are always grounded in the sharing of properties.

There is a further thesis that I do not find explicitly stated, but that seems to be implied by things Shoemaker says about the “realization” relation; and also by his willingness, for all intents and purposes (saving the urge to satisfy reductive ambitions), to identify a property with the cluster of CPs constituting its essence. The claim I find implicit in Shoemaker’s remarks on these topics is that having all the CPs conferred by a property is *sufficient* for having that property, whatever *further* CPs one may or may not have.

The doctrines ascribed to Shoemaker in the preceding two paragraphs may be summed up in the principle:

- (2) If x has S and S is a CP, then there is a property F such that: (i) x has F ; (ii) S is a member of the set of CPs conferred by F ; and (iii) necessarily, anything that has every member of this set of CPs also has F .

For every property, then, there is an associated list of CPs it confers that may be identified with the property in question (for all intents and purposes, short of

reductionism about properties; and barring worries about the possibility of properties differing only in backward-looking causal features). Every property F is necessarily such that: (1) if anything has F , it has all the CPs on the associated list; and (2) if anything has all the CPs on the list, it has F .

CPs and Diachronic Identity

In “Identity, Properties, and Causality”,¹⁷ Shoemaker argues that many of the causally significant physical properties of things are “internally related” to the persistence conditions of the things that have them — i.e., something can have one of them only if it has the appropriate persistence conditions. This is a consequence, he thinks, of certain facts about the nature of properties and the causal powers they confer: “...there is an internal relation between what properties an individual can have and what its persistence conditions are. This is because the causal powers which the properties of a thing jointly bestow on it are individuated in part by how their manifestation will influence the future career of that very thing.” (RMRC p. 4) In the rest of this section, and the next, I try to spell out in some detail what it is about Shoemaker’s CPs that ties them so tightly to persistence conditions.

I have just shown that Shoemaker assumes there are properties conferring highly specific causal powers covering all the situations a thing with the property could get itself into; that, for every set of circumstances in which some effect is brought about (i.e., for every law-governed interaction whatsoever), there are enough CPs at work to explain the process. In other words, there are CPs conferred by properties belonging to objects, and

¹⁷ [IPC], reprinted in *Identity, Cause, and Mind*, pp. 234-60.

the possession of these powers entails, in conjunction with the circumstances in which the objects find themselves, that the effect takes place. The objects in a lawfully evolving system must, then, have properties with CPs keyed to the precise circumstances arising as the system evolves, the manifestation of which completely determines the later states of the system (insofar as the system is deterministic). In the case of a system containing persisting objects — objects that, as a matter of nomological necessity, continue to exist under the circumstances that arise as the system evolves — there must be CPs manifested in the evolution of the system under those circumstances that insure the objects' *persistence* during the process.

To see how such powers are supposed to entail persistence conditions, it is helpful to introduce, in a bit more detail than Shoemaker typically provides, an example of a property and some of its CPs. The example illustrates some important distinctions among CPs. Suppose *P* is the property of being a body with a particular temperature. Here are three sorts of CPs we should expect *P* to confer upon any object, *x*, that has it. (a) *x* will have a power or tendency to decrease in temperature at a specific rate when certain *other* things are true of *x*'s surroundings, and *x* will have this power conditionally upon *x*'s also having a certain mass and size and maybe other properties as well. (b) *x* will have, conditionally upon properties like being made of sodium, the power to explode or burn up or otherwise cease to exist (at least as a discrete hunk); a power that would be manifested in, for example, the presence of water. (c) *x* will also have, conditionally again on properties like having a certain mass and size, powers to raise the temperatures of contiguous objects by particular amounts, when it stands in certain relations to them and they have certain properties. And so on, literally *ad infinitum*. For all the possible

kinds of object, K , that could have this temperature-property; and for every possible set of properties, S , with which it could be coinstantiated; and for every set of circumstances C in which things with the property could appear; there will be CPs implying that things with P , conditionally upon being of kind K and having the properties in S , will cause or undergo thus-and-so in circumstances C . K and the members of S are the properties the CP is conditional on; circumstances C might be called the “manifestation conditions” or “triggering conditions” built into the CP’s power; and the manifestation of the power is causing or undergoing thus-and-so.

There are differences among the three examples of CPs given above that are important to Shoemaker’s claim that some properties entail persistence conditions. The power embedded in (a) is what I will call an “identity-entailing” power, and the CP that embeds it may be called an identity-entailing CP; it is a CP in which the power conditionally conferred is a power x has to bring it about that x itself do something or undergo something at a time other than that at which the manifestation or triggering conditions for the power obtain. The identity-entailing CP implies that, when a thing has a property conferring it, and when it has the properties on which it is conditional, and when it is in the triggering circumstances relevant to the power involved; then the thing *will exist at another time*, i.e., that time at which the manifestation of the power occurs. The power embedded in (b) is “identity-excluding”, since its manifestation implies that the thing with the power ceases to be. Identity-excluding CPs imply that, if x has one, and has the properties upon which it is conditional, and stands in the triggering circumstances associated with the power, x ceases to exist. Identity-entailing and identity-excluding powers and CPs may be called “diachronically-loaded”, and contrasted

with “identity-neutral” powers and CPs, such as those that figure in example (c). The fact that x has the identity-neutral CP described in (c), and that x has the properties upon which it is conditional, and that x is in the triggering conditions relevant to the power, does *not* imply that x exists, or fails to exist, at other times — at least, it does not imply this in virtue of the structure of the CP alone. Perhaps possession of one of the properties upon which the CP is conditional might necessitate x ’s continued existence in these circumstances. Spelling out the notion “in virtue of the structure of the CP alone” might take some work; but the basic idea seems clear enough to go on with.

Conventions for Naming CPs

It will be useful to have a kind of shorthand for representing CPs. The first step is to establish a convention for representing the structure of the power embedded in a CP. Such powers will be designated in the following way: By putting an arrow in front of an open sentence, I create a name for the power to acquire the property or condition determined by the open sentence in some specified amount of time (the precise period will be suppressed for simplicity). (I shall always assume that there *is* a property or condition corresponding to the open sentence, although in fact not all open sentences will, or could, *really* yield a causally relevant property or condition.) Adding “in S ” will be the way to indicate the manifestation conditions that would trigger the exercise of the power. So “ $\rightarrow Bx$ in S ” should be read: “the power x has at any given time t to *itself* acquire B (at a time a certain distance from t) when in conditions S at t ”; or, more simply, “the power to acquire B in conditions S ”. A thing x that, at t , has $\rightarrow Bx$ in S will, if it is in conditions S at t , acquire B at $t+n$ — where n is whatever amount of time is built into the

description of the power. If all causal processes are temporally “gapless”, the most basic case of a power will be one in which the manifestation occurs *immediately after* the occurrence of the triggering conditions. Manifestation “immediately after” triggering conditions is possible, even if time and causal processes are continuous. One example of a power of this sort would be: the power x has at t to acquire B for a very short period n including every moment in the *open* series of instants $(t, t+n)$. (An open series $(t, t+n)$ does not include t or $t+n$ but only the instants between them.) In other words, if x has the power and it is triggered at t , x will have B for the period n units long that immediately follows t . Another sort of “immediate manifestation” would be an effect at an instant t triggered by x ’s being in certain conditions during an open series of instants with t as its later boundary.

To further specify my conventions for naming powers: Putting an arrow in front of a *closed* sentence names a power to bring about a state of affairs in some specified amount of time. So, for example, “ $\rightarrow(\exists y)By$ in S ” abbreviates “the power x has at a given time t to make it the case that *something* have B (at a time a certain distance from t) when x is in conditions S at t ”. Such powers are identity-neutral.

So far we have a handy way of representing *powers*. But a property is individuated by its CPs, the *conditional* powers conferred. Here, and elsewhere (section VI), it will be useful to depict the CPs conferred by a property as a list beneath the name of the property. Each line on the list includes the property upon which possession of the power is conditional, followed by the name of the power. For instance, in the brief beginnings of a list below for the property P , A is the property upon which possession of

$\rightarrow Bx$ in S^1 is conditional, and C is the property upon which possession of $\rightarrow(\exists y)Dy$ in S^2 is conditional.

Px

1. $Ax, \rightarrow Bx$ in S^1 (Identity-Entailing CP)
2. $Cx, \rightarrow \sim(\exists y)(y=x)$ in S^2 (Identity-Excluding CP)
3. $Dx, \rightarrow(\exists y)Fy$ in S^3 (Identity-Neutral CP)

...

The first CP on the list is identity-entailing. P confers upon a thing, conditionally upon the thing's also having A , the power to *itself* become or acquire B — a power that will be activated, causing the thing to subsequently acquire B , if the thing is also right then in conditions S^1 . The second CP is identity-excluding; things with P , if they also have C and are in S^2 , will cease to be thereafter. The third CP is identity-neutral: x , if it also has D and is in S^3 , will cause the state of affairs *something's-having- F* ; but this does not imply that x continues to exist when that state of affairs is brought about, nor that x fails to exist then.

Realization Defined in Terms of Shared CPs

Shoemaker makes use of the relationship he posits between properties and CPs to explicate a certain notion of *realization* — the kind of realization that is relevant to the functionalist thesis that mental properties are realized by or in physical properties:

In general, then, property *X* realizes property *Y* just in case the conditional powers bestowed by *Y* are a subset of the conditional powers bestowed by *X* (and *X* is not a conjunctive property having *Y* as a conjunct).¹⁸

The prohibition against conjunctive properties realizing their conjuncts is part of Shoemaker's assimilation of realization to the determinate-determinable relation; a determinable property is supposed to imply each determinate, and not the reverse; and each determinate is supposed *not* to be equivalent to the conjunction of the determinable and *something else*, some further property. I should be willing to grant Shoemaker these distinctions, though some will no doubt be skeptical about them. In any case, I shall advert only to the following necessary condition upon Shoemaker's realization relation:

- (3) If *F* realizes *G* then the set of CPs conferred by *G* is a subset of the set of CPs conferred by *F*.¹⁹

Shoemaker says his theory of realization can be detached from his theory of the essences of properties; one might believe that a property is only contingently associated

¹⁸ RMC, p. 78. For his most recent explication of the notion of a conjunctive property, and his reconsideration of whether conjunctive properties can ever be realizers of other properties, see PR, pp. 24-28. These changes are not relevant to any of the points I shall make.

¹⁹ This realization relation is the "realization₁" or "same-subject realization" of PR (see, e.g., p. 29). For detailed discussion and criticism of Shoemaker's theory of realization, in conjunction with Shoemaker's functionalism, see Brian McLaughlin, "Mental Causation and Shoemaker-Realization", *Erkenntnis* 67 (2007), pp. 149-72.

with the set of CPs it confers, but still agree that realization can be explicated in terms of conferring CPs in the way Shoemaker suggests. Although this may be the case, I am here interested in Shoemaker's system as a whole: how it hangs together, where it is under stress, and what parts need filling in.

III. Persistence Conditions and Sortals

Coincident Objects and "Too Many Minds"

Shoemaker maintains that, although a person is entirely physical, there are other physical objects with which each person shares his or her space. The kind of coincidence between physical objects that Shoemaker posits is not just spatial coincidence (imagine a ghost passing through a person — neither would constitute the other); it requires being made out of the same matter, the complete sharing of parts at some level, or what might be called "sharing a complete decomposition":

(D2) x and y share a complete decomposition \equiv_{df} every part of x has a part in common with some part of y , and *vice versa*.

Shoemaker mentions three things that he supposes are distinct from, while sharing a complete decomposition with, a human person such as myself: (1) the aggregate of matter that presently constitutes my body, but will soon become more and more widely scattered even though I will not; (2) the human organism or animal that was a fetus

before Zimmerman-the-person ever existed, and that could perhaps continue to exist without me were my cerebrum destroyed or transplanted; and (3) my body, a thing that will still be around for some time after the organism dies, awaiting burial or cremation. The four of us have slightly different persistence conditions, and so must be distinct. But Shoemaker recognizes the force of what he calls the “Too Many Minds” objection to this multiplication of coincident objects; he agrees that “it is absurd to suppose that where I stand there are two [or more] different creatures having exactly similar mental lives.”²⁰ Of the four of us, it had better be the *person* who has the mental states; and so Shoemaker is committed to the following thesis:

- (4) For every human person x , there is more than one coincident physical object y such that: y has no mental states, and x and y differ in their persistence conditions.

In elaborating his views about the properties of coincident objects, and their relations to persistence conditions, Shoemaker introduces the terms “thin property” and “thick property”, and makes use of the more familiar notion of a *sortal*. Thin properties are ones shared by coincidents; coincidents differ, however, in their thick properties because of “internal relations” among thick properties, sortals and persistence conditions. The burden of this section is the examination of these relations and their rela-

²⁰ “Self, Body, and Coincidence” [SBC], *Proceedings of the Aristotelian Society*, Supplementary Vol. 73 (1999), pp. 287-306; quotation from p. 291. Shoemaker is responding to the “Too Many Minds” objection

Persistence Conditions and Micro-Careers

Sometimes Shoemaker describes thick properties as ones that can only be exemplified by a thing if it has a certain *sortal*. Just as frequently, and in the same places, he says they can only be exemplified if a thing satisfies certain *persistence conditions*, strongly suggesting that he takes “falling under a given sortal” and “satisfying certain persistence conditions” to be equivalent expressions. Nevertheless, as shall appear, there are things he says about sortals and persistence conditions that imply that objects can differ in persistence conditions while sharing the same sortal. The apparent inconsistency would disappear if there were two notions of “persistence conditions” in the background: highly specific persistence conditions that could never be shared by coincidents, and more general kinds of persistence conditions that could. Sortals would, then, be identifiable with persistence conditions of the more general kind. A close look at Shoemaker’s understanding of persistence conditions, in terms of possible careers, reveals the possibility of narrower and broader readings; the resulting ambiguity between (what I shall call) “maximally precise” persistence conditions and more general ones corresponding to sortals makes perfect sense of some otherwise puzzling passages.

Shoemaker associates each sortal with a set of possible careers for objects falling under the sortal.²¹ He introduces a couple of types of career; but, most fundamentally, “the possible careers are all [of the] possible series of microphysical states” that would, if

as formulated by Eric Olson; see Olson, *The Human Animal* (New York: Oxford University Press, 1997).

See also Chisholm, *Person and Object* (La Salle, Ill.: Open Court, 1976), pp. 104-108.

²¹ RMRC, pp. 6-11.

appropriately causally interconnected, constitute the history of a single object.²² The microphysical states in question are instantaneous “maximal microphysical states of affairs.”²³ Each such state of affairs is identified with the exemplification, by a set of microphysical entities, of a certain sort of complex, structural property — a property the exemplification of which implies all the intrinsic facts about the particles in question, and all the facts about their microphysical interrelations.²⁴

Some series of maximal microphysical states of affairs, if each member occurred and was spatiotemporally and causally related properly to occurrences of the others, would be *complete* careers (what I shall call complete “micro-careers”) of objects. The following two-stage definition captures Shoemaker’s idea, and enables us to ask some questions that need answering:

First, think of a micro-career as a series of maximal microphysical states that, if occurring in the right order and properly causally related, would insure that there was at least one object tracing out the same space-time path as the series of states. More precisely:

²² RMRC, p. 13. See also pp. 8-11.

²³ RMRC, p. 8.

²⁴ Shoemaker’s maximal microphysical properties are roughly equivalent to what I have called “synchronic complete specifications” or “set-theoretic complete specifications”; and we use them for similar ends. See my “Criteria of Identity and the ‘Identity Mystics’”, *Erkenntnis* 48 (1998), pp. 281-301; and “Immanent Causation”, *Philosophical Perspectives 11: Mind, Causation, and World*, ed. by James E. Tomberlin (Boston, Mass.: Blackwell, 1997), pp. 433-71. My work was influenced by earlier definitions due to Jaegwon Kim; see his “Supervenience for Multiple Domains”, reprinted in Kim, *Supervenience and Mind: Selected Philosophical Essays* (Cambridge University Press: Cambridge, 1993), pp. 109-130.

- (D3) M is a micro-career $=_{df}$
- (i) M is a series of maximal microphysical states of affairs; and
 - (ii) Necessarily, if (a) the members of M occur at a series of space-time regions, and (b) occurrences of later members of M exhibit causal dependencies “of the right sort” upon occurrences of the earlier members of M , then there is an x such that, at each region in the series, x has a complete decomposition consisting of all the particles involved in the occurrence of the member of M located there.

Shoemaker’s “possible careers” are *complete* micro-careers, series of microphysical states that could constitute the *entire* career of a thing:

- (D4) M is a complete micro-career $=_{df}$
- (i) M is a micro-career; and
 - (ii) It is possible that there be an x such that:
 - (a) for every member of the series of regions occupied by x , there is a member of M that occurs there,
 - (b) the occurrence of the member of M involves a set of particles that is a complete decomposition of x at that time, and
 - (c) the order in which the members of M are exemplified in the series of regions is the same as their order in M .

When M is a micro-career, and an object x satisfies the set of conditions that clause (ii) says are possibly satisfied, I shall say that M is x 's complete micro-career, or that x exemplifies the complete micro-career M .²⁵

Whenever a micro-career is exemplified by an object, the series of states of affairs that occur must be “causally dependent in the right way”. This causal dependence requires, first of all, that each occurrence of a member be causally dependent upon occurrences of earlier members of the series (if such there be), and that the dependence never “skip over” intermediate exemplifications. In other words, the series of occurrences of states of affairs must constitute a causal process, with the causation propagating through the series of instantaneous states of affairs in the order given by M . But more than this is required; insofar as continuity of persisting internal structures or features is necessary for the persistence of a certain kind of thing, exemplifications of the least inclusive microphysical states upon which those structures and features supervene must also be causally dependent upon one another in the same orderly fashion.

Here is an example that shows the need for this sort of further requirement (the sort of thing Shoemaker would, I expect, want to be included in a more precise specification of his “right way” clause): Consider a mother and her child at whatever

²⁵ Throughout RMRC, Shoemaker speaks freely of merely possible histories, and so merely possible states of affairs; and makes use of notions like that of a state of affairs occurring at a space-time location, and that of an occurrence of a state of affairs “involving” certain particles. Recalling the occasion for which this paper was written, I feel compelled to mention that an ontology capable of making sense of such talk in a completely straightforward way is set forth in Chisholm's *Person and Object*; there, states of affairs are construed as things that exist whether they occur or not, and that can be “concretized” by more than one collection of objects in more than one location.

point in fetal development one thinks a new life begins. Now suppose the mother were to die at precisely that point (let us pretend her death is instantaneous), and her child were (in one way or another) kept alive for some period of time. This provides an example of a series of microphysical properties — those of parent and then offspring — that exhibit nonbranching causal dependence but not causal dependence of the right sort. The states of the essential organs and other structures in the child — its nervous system, bones, etc. — are not directly dependent upon the states of the same type of organs and structures in the dying parent. And, for human beings anyway, that sort of dependence is required for persistence. A perfectly general way of spelling out the “right” sort of causal dependence between microphysical states of affairs in complete histories of persisting objects would, of course, be extremely difficult to formulate; probably impossible, in generality.²⁶

Particular persistence conditions “partly define a given sort of continuant”, and “can be thought of as determining, for each thing [of that sort] and each moment at which it exists, a set of possible careers, each of which would count, if it occurred, as a career of that thing.”²⁷ This basic idea can be developed in several ways, depending upon how narrowly or broadly we construe Shoemaker’s conception of “sorts”. Here is a potentially very narrow sort for which persistence conditions can be defined. Let *H* denote the (unimaginably huge) set of all the possible complete micro-careers of objects *of all kinds*. *H* can be divided into distinct sets of histories, each including all and only the histories open to a certain (perhaps merely possible) object. Each such set can be

²⁶ I have taken a stab at explicating the “right sort” of causal connections for the very limited case of portions of fundamental (or “homeomerous”) matter, including simple particles. Cf. Zimmerman, “Immanent Causation”.

thought of as giving “maximally precise persistence conditions” for a very narrow sort. (Note that these sets of histories will sometimes overlap — passing through all and only the same collections of particles at the same times — since Shoemaker maintains that two or more objects coincide for their entire histories in some worlds.) These sets of histories correspond to “maximally precise persistence conditions”:

(D5) S constitutes maximally precise persistence conditions $=_{df}$ S is a set of complete micro-careers, and it is possible that there be an x such that a complete micro-career M is a member of S if and only if it is possible that M be x 's complete micro-career.

In other words, there is some (perhaps merely possible) object such that S includes all and only the careers open to that object. What it is for a particular object to have certain maximally precise persistence conditions as *its* persistence conditions is clear enough:

(D6) S constitutes x 's maximally precise persistence conditions $=_{df}$ S is a set of complete micro-careers such that a micro-career M is a member of S if and only if it is possible that M be x 's complete micro-career.

Shoemaker almost certainly believes that, even though two objects may coincide for their entire histories, there must be possible scenarios in which the two would come apart. In a successful cerebrum transplant after which the body is kept alive, person and

²⁷ RMRC, p. 9.

human organism go their separate ways; if the transplant is unsuccessful, the person dies while the organism survives; etc. In general, for any pair of distinct coincidents, there must be possible episodes the one could have survived that the other could not have, or possible episodes after which they would no longer coincide.²⁸ So, whenever there are coincident objects, they will be distinguished by the sets of possible histories open to them — they will have different maximally precise persistence conditions.

Do Sortals Confer Maximally Precise Persistence Conditions?

Precisely how narrow maximally precise persistence conditions are depends upon other metaphysical doctrines. Given certain plausible assumptions about the essentiality of origins, maximally precise persistence conditions will *not* correspond to the persistence conditions for very general types of things, like persons or trees. If my genetic make-up at my origin is essential to me, so that I could not exist and have begun life with a different genetic profile, then all careers open to me begin with an organism including my genes. And only creatures that could begin with my genetic profile could share maximally precise persistence conditions with me, since my genes are part of, or are at least determined by, the maximal microphysical states at the beginning of my actual career. Shoemaker's views about essential properties seem to be strict when it comes to origins: in one place, he says that a career is possible for me only if it branches off at some point from my actual career.²⁹ On the other hand, those who have more relaxed standards about essential properties may be able to construe even very general ordinary

²⁸ See SBC, pp. 305-306.

²⁹ See C&P, pp. 215-216; and CMN, pp. 69-71.

sortals, such as *dog*, as maximally precise persistence conditions. If every dog could have had any of the possible micro-histories open to any other dog (e.g., Lassie could have been a wire-haired terrier with the same complete micro-career — and film career — as Asta, the dog from the *Thin Man* movies), then all dogs have the same maximally precise persistence conditions.

I shall assume that Shoemaker would not allow such latitude; I am confident he would deny that he and I share maximally precise persistence conditions for the simple reason that each of the possible micro-careers open to Shoemaker differs from each of mine at least in its early stages. But *human person* is an example of a sortal that Shoemaker ascribes to both of us; so things with different maximally precise persistence conditions can have the same sortal.

It might seem, then, that when Shoemaker says that a thick property implies a particular sortal, he is not committed to the claim that thick properties imply maximally precise persistence conditions. On the other hand, there are reasons to think that he *is* committed to this.

I find some of what he says about these matters hard to interpret. There is a particularly puzzling passage in RMRC. In addition to the maximal microphysical states that characterize sets of particles, Shoemaker recognizes “micro-structural properties” of *objects*. Corresponding to each maximal microphysical state of the particles that constitute an object, there will be a micro-structural property of the object itself — a property that a thing has if and only if it has a complete decomposition into particles exemplifying the corresponding maximal microphysical property. One might call these properties of objects their “maximal micro-structural properties” (my own term, not

Shoemaker's). When two objects are coincident, their common decomposition into particles will be in a certain maximal microphysical state; and so the two objects will have the corresponding maximal micro-structural property in common.

Shoemaker accepts the possibility that two *persons* might share a single body, à la Jekyll and Hyde.³⁰ In such a case, there would be a maximal microphysical state shared by the particles of the two persons; so there would be a maximal micro-structural property shared by the two persons. Now one might well think that they share the same sortal property; and, indeed, that is what Shoemaker says: their shared sortal is *person*.³¹ But Shoemaker also says they differ in many of their mental states, and he explains such differences by supposing that there are differences in the thick properties they exemplify.³² Then he says that the thick properties “can be thought of as conjunctions of micro-structural properties of the first sort [i.e., maximal micro-structural properties, shared by coincidents] and sortal properties.... And objects that are indiscernible with respect to these [conjunctions] will be indiscernible *simpliciter*....”.³³ The Jekyll and Hyde coincidents in question differ, he says, in some of their thick properties; so they must, it would seem to follow, differ in the conjunctions of micro-structural and sortal properties. Since they share micro-structural properties, they must differ in sortal. So they must fall under narrower sortals than the common sortal, *person*.

³⁰ RMRC p. 17-21.

³¹ RMRC, p. 20

³² The thin maximal micro-structural properties of Jekyll and Hyde “do not by themselves realize, in any of the senses so far defined, the thick properties, e.g., the mental properties, that distinguish them” (RMRC, p. 19).

³³ RMRC, p. 19.

So far as I can see, the only way to make sense of Shoemaker's combination of claims is to suppose that he is silently shifting from one conception of "sortal" to another. He does not himself explicitly distinguish two conceptions of "sortal", nor does he say that the two coincident persons must fall under different sortals in some narrower sense of the term. But since this follows from the combination of claims he makes, I shall pursue the idea and offer it to him as a plausible extension of his theory.

Presumably Jekyll and Hyde do fall under different sortals in *some* sense of this rather flexible term-of-art — at least, they satisfy different maximally precise persistence conditions, and such persistence conditions might be thought of as highly specific sortal properties. Suppose that, by means of drugs or an operation, the psychology of Jekyll is completely wiped out, while that of Hyde continues. The complete micro-career of Hyde — who survives this episode remembering ("from the inside", in the characteristic first-person manner) only his own past (evil) deeds and contemplating even worse ones now that Jekyll is entirely out of the way — is not a possible micro-career of Jekyll. Clearly, given Shoemaker's views about criteria of personal identity, there are episodes along these lines that one of the two persons could survive though the other could not; so they have distinct maximally precise persistence conditions, even should they happen never to actually diverge, but to share the same complete micro-career in the actual world. Maximally precise persistence conditions — unlike the more general sortal, *person* — could, therefore, play the role that Shoemaker assigns to sortals in the problematic passage (RMRC, p. 19) where discernible objects are said never to share the conjunction of the same maximal micro-structural property *and sortal*. The differences in maximally precise persistence conditions could be the factors that, in conjunction with maximal

micro-structural properties shared by Jekyll and Hyde, yield properties insuring that “objects indiscernible with respect to these will be indiscernible *simpliciter*”. Maximally precise persistence conditions seem to be what is needed to play the role that Shoemaker is assigning to sortals in this passage — a role that, on the next page, he explicitly says the sortal *person* cannot play.

Here is a more general argument for thinking Shoemaker at least sometimes has maximally precise persistence conditions in mind when he talks of sortals. As shall appear, below, Shoemaker’s commitment to coincident objects and the physical realization of mental states leads to his positing physical differences in objects that share the same maximal micro-structural property. His general strategy for explaining the nature of these physical differences is: (i) to emphasize the fact that the coincident objects differ in their persistence conditions, and so could cease to coincide at some point in their histories; and then (ii) to build this difference in persistence conditions into the physical properties themselves. If the Jekyll and Hyde characters differ mentally, and so (given the physical realization of the mental) physically; and if the physical difference is to be laid at the feet of differing persistence conditions; then the relevant difference must have to do with something like what I call maximally precise persistence conditions, and not the persistence conditions associated with the less precise sortal *human person*. Further reason to think that Shoemaker’s sortals typically imply maximally precise persistence conditions will emerge from the exploration of the relations he posits between “thick properties” and sortals.

It is easy to see how to recover the more generic sortals from the maximally precise ones. For example, according to Shoemaker, the distinctive thing about persons

is that they obey psychological criteria of identity of some kind; nonbranching psychological continuity of a certain sort is both necessary and sufficient for personal survival. One may identify the general sortal *person* with the set of all those sets of possible careers all of the members of which preserve psychological continuity, and last as long as it is possible (in the circumstances) to preserve nonbranching psychological continuity.³⁴

IV. Thin Properties, Thick Properties, and Persistence Conditions

Coincident Objects and Their Properties

This much detail puts us in a position to better understand Shoemaker's distinction between "thin" and "thick" properties. Thin properties "are properties that are

³⁴ This last condition — that a sortal for *person* must be identified with sets of possible careers that continue as long as nonbranching psychological continuity is preserved — makes it clear that possible careers must be allowed to differ in purely *extrinsic* ways. It must be possible for a series of microphysical states to fail to be a complete possible career due to the presence of subsequent microphysical states that insure the continuation of a person with the earlier states in its history. For example, according to Shoemaker's nonbranching psychological continuity account of personal identity, a series of microphysical states may look for all the world like the career of a single person, yet fail to be one due to the presence of nearby microphysical states that branch off to constitute the career of a second person psychologically continuous with the original one. In my "Criteria of Identity and the 'Identity Mystics'" (see esp. pp. 285-7) and "Immanent Causation" (see esp. pp. 441-2), I define the notion of a micro-career in such a way as to allow that purely extrinsic differences may matter, and can be used to distinguish intrinsically similar careers.

necessarily shared by coincident objects”.³⁵ The notion of “thin property” at work here amounts to this:

(D7) P is a thin₁ property =_{df} (i) P is possibly such that some physical object has it while sharing a complete decomposition with another object; and (ii) necessarily, if some object has P , then so does anything that shares a complete decomposition with it.

I add the subscript because this definition captures just one aspect of Shoemaker’s notion of a thin property. He also characterizes thin properties as the kind of properties that imply very little about the persistence conditions of things that have them. I shall offer a detailed interpretation of this second aspect of thinness (“thin₂”), one that makes use of “thin₁”. In what follows, an unsubscripted “thin” will mean what Shoemaker means by the word. His thin properties are supposed to display both aspects of thinness. But it will turn out to be less than obvious that properties that are thin₁ need always be thin₂.

Some Questions About Thick Properties

Shoemaker’s thick properties are said to stand in “internal relations” to the persistence conditions of things that have them. But the nature and source of these internal relations could use a bit of unpacking. What I offer here, then, is a theory of thick properties that Shoemaker will, I hope, recognize as his own. Perhaps he will not embrace all the

³⁵ “Micro-Realization and the Mental”, forthcoming in a *festschrift* for Jaegwon Kim (p. 15 in manuscript); see also RMRC, p. 5; and SBC, pp. 302-303.

strategies I offer him; but I am confident that the resulting theory is, in rough outline at any rate, true to his conception. If he does not accept my whole package, it would still be useful to know where he demurs.

I take it that the thick and the thin are restricted to properties that may be possessed by coincident objects — at least, it is only in such cases that the distinction is of much use. So far as I can see, properties that no object could have when it is coincident with another (if indeed there are any such properties among the “genuine”, causally relevant, “make-for-real-change” properties) could be stipulated to belong to either category without affecting the usefulness of the distinction. Should they count as thin, since, trivially, if something has one, then anything coincident will have it? Or as thick, since, if a thing has one, there can’t be a coincident object with different persistence conditions that also has the property? It would seem to be a matter for stipulation; one might as well simply restrict the thick and the thin to properties that are open to coincidents.

What else characterizes thickness besides openness to coincidents, and failure to be thin₁? Shoemaker says that thick properties are “internally related to the persistence conditions of the things that have them”.³⁶ He also says that “sortal properties” are internally related to thick properties, and indeed are themselves thick properties.³⁷ Shoemaker’s examples of sortals include such kinds as *person*, *animal*, and *aggregate*; and he says that “having a certain sortal property is (at least) a matter of having certain

³⁶ RMRC, p. 9.

³⁷ RMRC, pp. 12-13.

persistence conditions.”³⁸ So “thick property” appears to be definable as: a property that can be had by a thing that shares a complete decomposition with another thing, and that implies that whatever has it has certain persistence conditions, or — perhaps equivalently — falls under a certain sortal. But do thick properties imply the persistence conditions associated with general sortals, like *human person* — persistence conditions that do not necessarily distinguish between coincidents such as Jekyll and Hyde, and that can be shared by Shoemaker and me, despite the fact that we differ in the range of possible careers open to us? Or does he have in mind highly specific sortals, ones that imply maximally precise persistence conditions? Do some thick properties imply maximally precise persistence conditions, while others do not? An example of the latter would be a thick property “internally related” to the sortal *human person*, but *not* to the maximally precise persistence conditions of either Jekyll or Hyde.

Exclusive and Intermediate Properties; Natural and Non-natural Properties

I approach these questions about thick properties by first defining two categories that, together with that of thin₁ property, comprise three mutually exclusive classes exhausting the properties that may be had by coincidents.

- (D8) P is an exclusive property =_{df} (i) P is possibly such that some physical object has it while sharing a complete decomposition with another object; and (ii) necessarily, nothing has P that shares a complete decomposition with an object that has P .

³⁸ SBC, p. 302.

- (D9) P is an intermediate property \equiv_{df} (i) P is possibly such that some physical object has it while sharing a complete decomposition with another object; and (ii) P is neither thin₁ nor exclusive.

Intermediate properties are not such that they *must* be shared by *all* things coincident with something that has them (i.e., they are not thin); but they *can* be shared by more than one coincident (i.e., they are not exclusive). A property might be intermediate because sometimes it is shared by coincidents, and sometimes not — sometimes only one of two or more coincidents has it; but sometimes it is had by more than one, or by all. On the other hand, it might be intermediate because, necessarily, if something has it, then there will be at least one coincident entity that has it and at least one that lacks it. If there are never more than two coincidents, then nothing has intermediate properties of this latter sort; but since Shoemaker believes in multiple coincidents, they represent a genuine possibility within his metaphysics.

Given multiple coincident entities, each with maximally precise persistence conditions that distinguish it from its fellows, the existence of exclusive and intermediate properties follows automatically, given a sufficiently latitudinarian attitude toward properties — albeit a latitudinarianism that Shoemaker himself *rejects*. Here is a recipe for constructing exclusive properties. For any thin property shared by, say, three such coincidents, one can generate an exclusive property by conjoining the thin property with the property of having the maximally precise persistence conditions associated with one of the three objects. Shoemaker would likely allow that this recipe yields genuine

properties (falling under his “sparse” conception of properties), for he invites us to think of thick properties as conjunctions of thin properties and sortals; and also to think of thin properties as disjunctions of thick properties.³⁹ But *intermediate* properties may be generated in a similar way, simply by conjoining the thin property with the *disjunction* of the persistence conditions of two of the three coincidents. Suppose aggregate, animal, and person are coincidents with maximally precise persistence conditions F , G , and H . Then, if P is a thin property they all share, e.g., *having parts with masses that sum to 220 kg* (a good candidate for a thin property, I take it), $P\&F$, $P\&G$, and $P\&H$ are exclusive; but $P\&(F\vee G)$, $P\&(F\vee H)$, and $P\&(H\vee G)$ are intermediate — if these three conditions do correspond to genuine properties.

Here is another potential source of intermediate properties: Given the possibility of Jekyll and Hyde, *human person* is a sortal which, when conjoined with certain thin properties, such as a maximal micro-structural property exemplified by Jekyll and Hyde, yields an intermediate property. As Shoemaker points out, such a conjunction is shared by the two coincident persons; it is not, then, exclusive.⁴⁰ For this reason, if Shoemaker’s thick properties are to distinguish coincidents, they must at least sometimes be *more* than the conjunction of a thin property and a sortal open to coincidents, like *human person*. Since thick properties are pretty clearly intended to be exemplifiable by only one member of any set of coincident objects, I conjecture that Shoemaker is thinking of them as conjunctions of thin properties and what I have been calling maximally precise persistence conditions.

³⁹ SBC, pp. 302-303.

⁴⁰ RMRC, p. 20.

On Shoemaker's "sparse" conception of properties, not just any disjunction or conjunction of properties or satisfiable conditions corresponds to a real property. So he need not be committed to the existence of intermediate properties by the mere fact that they can be cooked up from properties and persistence conditions he does accept. As Shoemaker notes, what he calls "properties" (and what I shall call "genuine properties") correspond closely to David Lewis's "natural properties".⁴¹ Shoemaker posits the following important connections between his genuine properties and other phenomena. It is only changes in genuine properties that constitute genuine (as opposed to "mere-Cambridge") changes⁴²; only sameness of genuine properties that insures intrinsic similarity.⁴³ Being a genuine property requires a certain amount of inductive projectibility, which gerrymandered sets of conditions lack.⁴⁴ And the genuine properties are the causally relevant ones, the ones involved in laws of nature.⁴⁵ Each of these claims corresponds to a part of the role that Lewis would assign to his natural properties.

So, for Shoemaker, it is an open question whether any particular conjunction or disjunction of properties or conditions yields a genuine property — as opposed merely to a condition that a thing could satisfy, and then not satisfy, without undergoing real change or altering its causal powers in any way. Shoemaker is not, then, forced to accept that there is a genuine intermediate *property* answering to the name " $P \& (F \vee G)$ " in the

⁴¹ For Lewis's notion of naturalness, see "New Work for a Theory of Universals", reprinted in his *Papers in Metaphysics and Epistemology* (Cambridge: Cambridge University Press, 1999), pp. 8-55.

⁴² Compare C&P, pp. 207-209; IPC, pp. 248-9; CMN, pp. 64-5.

⁴³ C&P, pp. 208-209.

⁴⁴ RMC pp. 74-98; inductive projectibility is discussed on pp. 87-92.

⁴⁵ CMN, pp. 64-8.

example above. And he could also deny that just any conjunction of a sortal and a thin property will turn out to be a genuine property (though I suspect he would *not* deny this⁴⁶). It would be possible, then, for Shoemaker to reject all intermediate properties, denying that they are genuine, causally relevant, etc.

Lewis takes naturalness as a primitive notion; and, at the end of the day, Shoemaker must do the same. But, during the day, Shoemaker has a lot to say about the relations among natural properties and causal powers. As I explained in section II, Shoemaker holds that properties are “individuated” by the causal powers they confer; and this implies, among other things, that each property confers the CPs it does essentially. Furthermore, it follows from sparseness that not every set of co-exemplifiable CPs corresponds to a genuine property; to be the set of powers conferred by a property, the set must be causally unified in certain ways.⁴⁷ Still, Shoemaker’s theory in effect takes the naturalness or genuineness of a property as a primitive notion, since conditional causal powers are one and all powers to gain, or lose, or generate instances of *genuine* properties when coinstantiated with certain other *genuine* properties.⁴⁸

Diachronically-Loaded CPs and Persistence Conditions (Again)

⁴⁶ At RMRC, p. 20, he discusses conjunctions of thin properties with a sortal that is less than maximally precise (it is open to coincidents). He does not register any reluctance to countenance such conjunctions as genuine properties.

⁴⁷ Cf. the somewhat different accounts of the causal unity of a property’s powers in C&P, pp. 223-5; and RMC, pp. 85-8.

⁴⁸ The circularity of his theory, if taken as a reductive account analyzing the notion of a property in terms of conditional powers, is frankly admitted in C&P, pp. 221-2; IPC, p. 250; and CMN, p. 64.

It is clear why Shoemaker thinks that some CPs have implications for a thing's persistence conditions; for some powers imply that anything with them can survive certain adventures, other powers imply that anything with them ceases to exist under certain conditions. But why does he think that the genuine properties conferring such diachronically-loaded powers must be thick — that is, tightly tied to a *complete* sortal, or to maximally precise persistence conditions?

I believe Shoemaker's thick properties are supposed to be exclusive, not intermediate (despite the puzzling passages about Jekyll and Hyde discussed above). But this would not, by itself, imply that they are "internally related" to the persistence conditions of the things that have them. There is nothing in the idea of exclusivity that would prevent a statue and a person from having some of the same exclusive properties, despite having radically different persistence conditions (it is easy to see this, if no person is ever identical to a statue). Indeed, for all my definition of "exclusive" tells us, a given exclusive property *P* could be sometimes a property of Zimmerman, the person, and at other times a property of the aggregate constituting me — just never of both at once. There is obviously more to Shoemaker's notion of thickness than mere exclusivity, since he says that thick properties are only open to things with one set of persistence conditions.

So why does Shoemaker think there must be genuine properties having this connection with persistence conditions? "This is because the causal powers which the properties of a thing jointly bestow on it are individuated in part by how their manifestation will influence the future career of that very thing."⁴⁹ "As I see it, each

⁴⁹ RMRC, p. 4.

sortal concept and the set of concepts of the thick properties associated with that sortal, those whose causal natures are internally related to the sortal's persistence conditions, form a sort of package. One should think the sortal concept is satisfied just in case one thinks the concepts of the associated properties are satisfied."⁵⁰ In this section, I develop a theory of the interconnections among CPs, properties, and persistence conditions that is suggested by Shoemaker's words, and would support these claims. My hypothesis is that Shoemaker believes many of the genuine properties of an object are individuated by what I shall call a *complete set of strongly* diachronically-loaded CPs.

The notion of a "diachronically-loaded CP" defined earlier is too weak to make the connection Shoemaker posits between CPs and persistence conditions. Possessing such a CP need not imply much of anything about the persistence conditions of things that have it. Consider, for example, the identity-entailing CP that is first on the list of CPs under the property P (section II, above): $Ax, \rightarrow Bx$ in S^l . Suppose that A , the property upon which this CP is conditional, were a sortal, or the possession of certain maximally precise persistence conditions, or a thick property implying a sortal or possession of such persistence conditions. In that case, P itself could be a thin property, open to things with different persistence conditions — persons and organisms and aggregates, say. Having P would not, by itself, insure that a thing would survive being in S^l ; P could be had by coincident objects, one of which has A and *must* survive being in S^l , another of which is essentially non- A and *cannot* survive S^l . (Recall that things with the property P can lack some of the properties, like A , upon which P 's CPs are conditional.) Similarly, suppose that part of being in triggering circumstances S^l were a

⁵⁰ RMRC, p.11.

matter of exemplifying a sortal, having precise persistence conditions, or exemplifying a thick property that implies a sortal or precise persistence conditions. Then, again, P might be open to coincident objects, both of which can have A , but only one of which can survive S^I , the other not even being able to get itself into S^I . Such identity-entailing CPs can be shared by things with radically different persistence conditions, and for entirely trivial reasons — e.g., because the CPs are conditional upon having certain persistence conditions, and at least one of the things doesn't have these persistence conditions.

There must be such uninteresting identity-entailing and -excluding CPs on Shoemaker's suppositions; for he tells us that a thin property confers the same CPs upon things with radically different persistence conditions. Some of these CPs are identity-entailing, but only because they are conditional upon sortals that are not common to all the objects with the thin property. Each of the coincidents will have some identity-entailing CPs that are "dormant", because they are conditional upon sortals exemplified only by the other coincidents. For instance, an organism and an aggregate of matter will have a thin shape property in common; when run over by a steam-roller, the shape will confer upon both objects certain identity-excluding CPs, conditional upon *being an organism*, along with certain identity-entailing CPs, conditional upon *being a mere aggregate of matter*.

But suppose, instead, that the condition A of a CP were a thin_1 property, and that the triggering circumstances S^I were also thin_1 — that is, that all the properties a thing *must* have if it is in circumstances S^I are thin_1 properties. In that case, if the CP is identity-entailing, it is (what I shall call) a *strongly identity-entailing* CP:

(D10) x 's power $\rightarrow Bx$ in S , conditional upon having A , is strongly identity-entailing =_{df} (1) necessarily, if anything has the power, has A and is in S , then it exists at some later times; (2) A is a thin₁ property; and (3) if a property P is such that, necessarily, if a thing is in conditions S , it has P , then P is a thin₁ property.⁵¹

Strongly identity-excluding CPs may be defined analogously:

(D11) x 's power $\rightarrow (\exists y)Dy$ in S , conditional upon having A , is strongly identity-excluding =_{df} (1) necessarily, if anything has the power, has A and is in S , then it does not exist at later times; (2) A is a thin₁ property; and (3) if a property P such that, necessarily, if a thing is in conditions S , it has P , then P is a thin₁ property.

The strongly identity-entailing and strongly identity-excluding CPs comprise the *strongly diachronically-loaded* CPs.

Shoemaker sometimes characterizes thin properties in terms of openness to coincidents, focusing just on thinness₁; but he often emphasizes the “thinness of their

⁵¹ If one wants to include among the strongly identity-entailing CPs those identity-entailing CPs that can be had by objects when they are in states that preclude coincidence with any other object, one should make the restrictions on A and S disjunctive: A is either a thin₁ property *or a property that cannot be had by an object that is coincident with another object*; and for every property P such that, if a thing is in conditions S , then, necessarily, it has P , P is either a thin₁ property *or a property that cannot be had by an object that is coincident with another object*. A similar modification is available for (D11).

causal roles”⁵² as well. The thin properties of a set of coincident objects “can be thought of as disjunctions of thick properties”⁵³, each disjunct necessarily such that a thing has it if and only if it has both the thin property in question *and* satisfies the persistence conditions appropriate to one of the coincidents. The causal roles of these thin properties “are impoverished compared with those of the thick properties that are their disjuncts.”⁵⁴ The relatively thicker nature of the thick properties should, I think, be regarded as due to the fact that they confer strongly diachronically-loaded CPs — CPs that are identity-entailing and identity-excluding and that are not conditional upon sortals or other properties implying particular persistence conditions. Thin properties may confer identity-entailing and identity-excluding CPs; but, when they do so, “the set of properties in conjunction with which the [thin] property bestows a certain power, and generates certain successor states, will always have to include a sortal property”.⁵⁵ In my terminology, thin properties may confer diachronically-loaded CPs, but not *strongly* diachronically-loaded CPs.

I separate out this second aspect of Shoemaker’s thin properties:

(D12) P is a *thin*₂ property =_{df} (i) P is possibly such that some physical object has it while sharing a complete decomposition with another object; and (ii) P confers no strongly diachronically-loaded CPs.

⁵² SBC, p. 302.

⁵³ *Ibid.*

⁵⁴ *Ibid.*

In some places, Shoemaker seems to define “thin” as my “thin₁”⁵⁶; in others, as my thin₂.⁵⁷ The two aspects of thinness are importantly distinct; it is not obvious that being thin₁ implies being thin₂. There might be some strongly diachronically-loaded CPs conferred by a thin₁ property, so long as they are shared by every one of the group of coincident objects that has the thin₁ property. I shall neglect this worry, however, and take “thin” to mean the conjunction of the two notions.

Shoemaker’s thick properties are not simply the ones that are not thin, nor even ones that are neither thin₁ nor thin₂. They do not merely confer strongly diachronically-loaded CPs; they confer enough of such CPs to insure that a thing has certain persistence conditions. If a property confers what I shall call a “complete set” of strongly diachronically-loaded CPs, the required link can be forged between conferring CPs and conferring persistence conditions.

Consider, for some property P , the thin properties and thin circumstances in which a thing can have it; these will be the “thin environments” for P :

(D13) $\langle A, S \rangle$ is a thin environment for P \equiv_{df} A is a thin property, S is a set of thin circumstances, and it is possible to have P and A , while being in S .

By “a *complete set* of strongly diachronically-loaded powers for P ”, I mean something like a list of CPs that tells us, for every thin environment a thing with P can get itself into,

⁵⁵ *Ibid*; see also PR, p. 110.

⁵⁶ “Since I have defined thin properties as the properties of things which they necessarily share with any things coincident with them...” (RMRC, p. 19).

whether or not the thing will survive in that environment. Now that is not *quite* what I mean. It would be asking too much to demand that a complete set says, for just *every* thin environment $\langle A, S \rangle$ for P , whether it is one that either forces the thing with P to continue to exist, or forces it to cease to be. A and S may be a determinable property and a determinable set of circumstances, such as *being made of flesh* and *being five feet in front of a moving train*. Suppose P is a thick version of the property of *being six feet tall* that is had by a person, and that implies personal persistence conditions. Until the determinable circumstance *being five feet in front of a moving train* is made more determinate, by including, for instance, facts about the state of motion of the person made of flesh and the speed of the train, this thin environment does not yield any definite strongly diachronically-loaded power; it just is not settled yet, by the rather vague A and S in question, whether a person with P and A in S will survive. But whenever an object with P gets itself into one of these determinable thin environments, it will also be in some more determinate environments; and (at least if determinism is true, or “true enough” for things with P) at least *one* of these (and, inevitably, *many* enriched with irrelevant details) will imply that a thing with P either does survive or that it does not. (This way of putting the matter has the merit of not requiring that we be able to say what it is for a set of circumstances to be “absolutely determinate”, short of including everything that happens in the universe.) The following notion of a complete set takes account of the possibility of determinable environments:

⁵⁷ “What makes thin properties thin is the thinness of their causal roles” (SBC, p. 302).

(D14) *P* confers a complete set of strongly diachronically-loaded CPs =_{df} for each thin environment $\langle A, S \rangle$ for *P*, either: (1) *P* confers a diachronically-loaded power conditional upon *A* and triggered in *S*; or (2) there is a thin environment $\langle A^*, S^* \rangle$ such that: (a) *A** implies *A*, (b) *S** implies *S*, and (b) *P* confers a diachronically loaded power conditional upon *A** and triggered in *S**.

Shoemaker defines thick properties as ones that are “internally related” to persistence conditions in virtue of the causal powers they confer. If that means conferring a complete set of strongly diachronically-loaded powers, then the set of all the thick properties an object can have will determine exactly which set of possible histories a thing could have — i.e., which maximally precise persistence conditions it has. And if having a thick property always implies certain maximally precise persistence conditions, then coincident objects with the same thick property could never go their separate ways; and if, whenever we have reason to suppose that *x* and *y* are coincident entities, we also have reason to suppose that *x* and *y* could, under some conditions, go their separate ways (something I believe Shoemaker would accept⁵⁸), then we should say that distinct coincidents never share a thick property. I shall call such properties “maximally thick”:

(D15) *P* is a maximally thick property =_{df} *P* confers a complete set of strongly diachronically-loaded CPs.

⁵⁸ In SBC, he considers purely hypothetical creatures for whom psychological and biological criteria of identity coincide, so that person and animal could never go their separate ways; and he seems to agree that in these circumstances we should deny that person and animal are numerically distinct. (See p. 306.)

Such properties are guaranteed not only to be not thin₂ but also not thin₁. In other words, they are exclusive properties, never intermediate properties.

If a property fails to be thin, must it be maximally thick, conferring a complete set of strongly diachronically-loaded CPs? Not if mental states are thick (as Shoemaker says they are), and can be exemplified by a pair of objects (such as Shoemaker and myself, or Jekyll and Hyde) with different maximally precise persistence conditions. But a less strict sort of thickness of property can be introduced: namely, a property's implying the satisfaction of a more general sortal. Let *S* be the set of all the maximally precise persistence conditions that are similar in that they make nonbranching psychological continuity both necessary and sufficient for persistence of the things that satisfy the conditions. *S* corresponds to Shoemaker's conception of the general sortal, *person*. Having a mental property, if it is only open to persons, will require having one of the maximally precise persistence conditions in *S*; that is, it will require satisfying the sortal, *person*. Although, as Jekyll and Hyde illustrated, coincidents can satisfy the same general sortal, most coincidents do not. So, most of the time, if a thing has a property that is thick in this less strict sense, nothing coincident with it will also have that property.

V. Shoemaker's Argument for Anti-Reductionism about Diachronic Identity

“Reductionism” about Diachronic Identity

According to Shoemaker’s sparse theory of properties, there is not a genuine property corresponding to just any set of jointly satisfiable conditions. So it is an open question whether there is a set of causal powers, unified in the right way, corresponding to the conjunction of having certain persistence conditions and having a certain thin property. Perhaps thin properties are genuine, but sortals and thick properties are not. To put the question another way, why does he think that the complete causal story cannot be told in terms of thin properties only? After all, he believes in microphysical supervenience; there are “momentary microphysical states of affairs consisting in there existing at certain times fundamental particles having certain properties and being related in certain ways”, and “[a] physicalist will hold that the properties at a time of a continuant will be determined by, or realized in, states of affairs of this sort.”⁵⁹ Corresponding to the maximal microphysical states of affairs that characterize the particles in a body, there are, as discussed above, maximal micro-structural properties of things made of those particles. Given the physicalist supervenience claim, the distribution of such micro-structural properties is enough to “determine”, in some sense, all the macrophysical facts. But these micro-structural properties are bound to be thin₂ or at least thin₁, if they are open to coincident objects and describable in such terms as “being composed of particles involved in such-and-such instantaneous microphysical state of affairs”. What causal work would be left undone if the only genuine causes were microphysical states of affairs, and the only genuine properties were thin micro-structural properties?

⁵⁹ RMRC, pp.7

In “Identity, Properties, and Causality”, Shoemaker insists that instantaneous microphysical states and thin properties cannot exhaust the real causes and real properties, because they are inadequate as the basis for the supervenience of an important set of facts. In particular, relations of cross-temporal identity do not supervene upon the distribution of thin properties and the pattern of causal relations holding among instantiations of those properties — unless those relations are specially stipulated to be the kind that only hold among stages of a single object. His reasons are complex, and made more difficult to follow, at times, due to his really having two targets: One is the supervenience of cross-temporal identity relations upon a thin base; the other is a more radical thesis about the reducibility of statements about cross-temporal identity to statements only about instantaneous things.

Initially, he describes the “reductionism” that he opposes as the view that “what is asserted by a statement of cross-temporal identity can be expressed by a statement that does not invoke the notion of identity through time at all, and talks merely of momentary things and their interrelations.”⁶⁰ Reductionism is said to come in two species: An eliminativist logical construction approach to persisting things (according to which terms for persisting objects disappear upon analysis), and a noneliminativist identification of persisting things with mereological sums of temporal parts. One obvious problem with construing the noneliminativist temporal parts view as a species of what he calls reductionism is that, according to the noneliminativist, it isn’t literally true that statements about persisting things “can be expressed by” statements just about momentary things and their interrelations. If the literal meaning of statements about

⁶⁰ IPC, p. 236.

persisting things were something properly expressed in terms of instantaneous things only, then there would be no difference between the two types of anti-reductionism. Their disagreement could amount to nothing more than a difference in the preferred idiom for making claims about persistence; their claims, and so their metaphysical positions, would be the same. It makes much better sense to understand the reductionism that is Shoemaker's target as a sort of supervenience thesis, rather than a thesis about meaning.

Indeed, he attempts to clarify his anti-reductionist conclusion by first stating a supervenience thesis that he *accepts*, admitting that it *sounds like* the reductionism he opposes, and then arguing that it does not amount to "extreme reductionism" because of the nature of the properties and causal relations in the supervenience base. Here is the thesis he accepts:

...[I]f in any possible world a set *S* of property instantiations makes up the history of a single persisting thing, then in any world that is qualitatively identical to that world, in the sense that the same properties are instantiated at the same space-time points, and also identical to it with respect to the sorts of causal connections that hold between the various property instantiations, the set of property instantiations in that world which is the counterpart of *S* will likewise make up the history of a single persisting thing. (IPC, p. 247)

Shoemaker provides license for my construal of reductionism as a supervenience thesis by saying that this "must surely sound like extreme reductivism about identity

through time — that is, it must sound just like the view I said at the outset I was going to oppose.” (IPC, p. 247) What he opposes, it turns out, is the thesis that a supervenience claim of this sort would remain true if the properties in the supervenience base were all thin ones, and the causal relations were ones that might hold among stages of distinct things. He frequently formulates his arguments as opposition to the claim that it is possible to give an “analysis” of the meaning of claims about persistence through time that is not “circular” in virtue of appeal, eventually, to the notion of persistence itself. As indicated, a temporal parts theorist should deny that the meaning of claims about identity over time are analyzable without remainder in terms of instantaneous things, instantaneous instantiations of thin properties, and identity-neutral causal relations. But Shoemaker’s argument can, in large part, be separated from the implausible claim about meaning and stated as direct opposition to a supervenience claim — a claim that would follow from an identity-free analysis of statements about persistence, were such an analysis possible.

Here, then, is my understanding of the reductionism Shoemaker rejects in IPC:

- (R) Whether or not temporally separated regions of space-time contain the same object supervenes upon the distribution in space-time of momentary instantiations of thin properties, and relations of “identity-neutral” causal dependence among them.

By “‘identity-neutral’ causal dependence” I mean a species of causal dependence that can hold between property instantiations even when they do not belong to the same subject; a

kind of causal dependence that is not restricted to the immanent causal case. If there were identity-neutral causal dependence, it could presumably be described without mentioning identity over time, and so could be invoked in what Shoemaker says cannot be given: a “noncircular analysis” of the appropriate sort of causal connections among stages of persisting things.

We have seen that Shoemaker thinks everything has thick properties conferring a repertoire of powers sufficiently rich to settle its persistence conditions. These are the missing elements from the reductionist’s supervenience base, the properties that he thinks must be added if facts about cross-temporal identity are indeed to supervene. Now for the details of his argument that, without such properties in the base, supervenience fails....

A Temporal Parts Version of Reductionism

It is natural to combine (R) with a temporal parts metaphysics; the defenders of (R) I shall consider — both real and imagined — will all be friends of temporal parts.⁶¹

Instantaneous temporal parts have certain thin properties — tendencies, for instance, to

⁶¹ In PR, Shoemaker mounts a direct attack upon the doctrine of temporal parts (PR, pp. 96-100). One of its crucial steps, however, presupposes that the doctrine of temporal parts stands or falls with its ability to solve David Lewis’s “problem of temporary intrinsics” [Lewis, *On the Plurality of Worlds* (Oxford: Blackwell, pp. 202-205)]. This considerably limits the argument’s scope. The doctrine of temporal parts was attractive long before Lewis introduced this “problem”; and many current proponents put little weight upon its ability to “solve” the problem in their defenses of the doctrine. For discussion of the weaknesses in Lewis’s use of the problem of temporary intrinsics (by philosophers who as a matter of fact posit temporal parts, while advocating an even more radical “stage” view about ordinary objects), see: Theodore

make it the case that there are similar temporal parts in nearby places. Every object that has a temporal part as one of its parts, has the thin properties the temporal part does at the time the part exists. Having these properties, and their accompanying powers, at that place and time, is just to have a part with these properties and powers that exists then and there.

Does a temporal parts advocate of (R) have to admit that an instantaneous temporal part has some thick properties, ones that distinguish it from each longer thing of which it is a part? The temporal part and the longer things certainly have different persistence conditions, and, as a consequence, different “dispositions” in some sense of the word. I suspect that the friends of temporal parts who want to uphold (R) should simply grant that instantaneous temporal parts have thick properties; if each one of them is essentially instantaneous, then no matter the situation in which it finds itself, it is about to go out of existence. I suppose one might say that there are no genuine properties of the temporal parts conferring identity-excluding CPs; there are simply true conditionals about what the temporal parts will do, with no genuine properties in the vicinity to provide a causal explanation for the truth of the conditionals. The reductionist need not do anything quite so heroic, however. Instantaneous things may well have thick properties without their thick properties playing any crucial role in the supervenience of persistence. (R) simply says that whether there is something persisting through some region of space-time is settled by the thin properties instantiated in space-time and the paths of (identity-neutral) causal dependence. The difference between a persisting thing

Sider, *Four-Dimensionalism* (Oxford: Clarendon Press, 2001), pp. 92-8; and Katherine Hawley, *How Things Persist* (Oxford: Oxford University Press, 2001), Ch. 1.

at a place and the instantaneous temporal part at the same place may depend upon the latter's having a thick property lacked by the former. But, so far as I can see, that's perfectly consistent with (R).

Need the temporal parts reductionist concede that different *longer* sums of temporal parts differ from one another in their thick properties? After all, the animal and the person, in actual cases of animal survival in the presence of personal death (due to extensive damage to the cerebrum, say), animal and person find themselves in certain circumstances which bring about the end of one but allow for the survival of the other. Mustn't there be a difference in thick properties corresponding to this difference in persistence conditions? First of all, such a difference in thick properties is not, or at least not obviously, inconsistent with the truth of (R). Perhaps, by means of some complicated argument appealing to principles of "explanatory exclusion", one could show that there couldn't be such thick properties if (R) is true. Perhaps one could argue: given (R) and the resultant adequacy of the thin properties to ground facts about the existence and persistence of animal and person, and to cause the instantiation of all subsequent thin properties, it follows that thick properties of person and animal would have nothing unique to contribute and so couldn't be genuine causally relevant properties. But this would need some showing. In any case, the reductionist is likely to deny that the persisting things have *any* thick properties. Given Shoemaker's approach to genuine properties, two things do not automatically differ in genuine properties just in virtue of satisfying different descriptions. So the animal and the person might share all the same genuine properties at the moment before the person ceases to exist, despite the fact that the former is truly described as something that will continue to exist, and the latter as

something that will not. These differences in their relative temporal lengths may not correspond to *causal* differences, and so may not be differences in genuine properties. If the causally relevant, genuine properties of persisting objects can be limited to just the thin ones it shares with all coincidents (including instantaneous temporal parts), no reason has been provided to suppose that any alleged thick properties of persisting things are really anything more than “grue”-like conjunctions of genuine thin properties (e.g., maximal microphysical properties shared with instantaneous temporal parts) with the condition that a thing also satisfies certain maximally precise persistence conditions — a condition that need not itself be regarded as corresponding to a genuine property.

The temporal parts reductionist will not be relying upon bare assertion in denouncing such supposed thick properties. She likens our selection of persistence conditions to our ways of drawing three-dimensional boundaries. Uncontroversially, the latter frequently fail to mark off genuine causally relevant borders in nature. There is nothing natural about belonging to the territory of a single country, for example — no genuine property common to all and only the hunks of land that satisfy this condition. Similarly, on her view, there is nothing deeply natural about the four-dimensional boundaries we draw, no distinct causal powers shared by all and only the sums of temporal parts that conform to one particular set of persistence conditions rather than another. The reductionist regards different persistence conditions (at least in the case of macro-physical objects) as nothing more than alternative ways of dividing up the contents of space-time; our privileging a few over a myriad of other possible, equally viable divisions is simply a reflection of our somewhat parochial interests. The fact that a certain region of space-time is occupied by a thing with the persistence conditions of a

person and also by a thing with those of a mere animal implies no local, causal differences between the two. To expect the person existing at a given time and place to have a causal impact that is different from that of the animal located then and there, would be like expecting there to be a difference between the following: (i) the effects of the waves of the *sea* upon the shoreline, and (ii) the effects of the waves of the *bay* upon the same shoreline — where the waves of sea and bay are identical, parts of two overlapping bodies of water.

Spinning, Homogeneous Disks as a Challenge to (R)

Shoemaker has several arguments against (R). Two only appear in his latest book, where they are briefly sketched. These are based on problems about personal identity and artifact identity; I shall come back to them later. His most sustained attack upon (R) involves the identity conditions for hunks of homogeneous matter in the form of disks or spheres. Using the terminology I have introduced here, it can be described as an argument for the conclusion that the nature of the “appropriate” sort of causal connections among a series of momentary instantiations of thin properties, if they are to constitute the history of a single persisting hunk of matter, can only be spelled out in terms of the activation of strongly diachronically-loaded CPs. As noted earlier, in IPC Shoemaker argues against, not just the supervenience thesis (R), but against a stronger thesis of meaning-equivalence that implies it: that propositions about diachronic identity are analyzable in terms of the instantaneous and the identity-neutral. So the need to include thick properties, defined in terms of strongly diachronically-loaded CPs, would imply a kind of circularity in the analyses of the notions of property, CPs, and persistence

that leaves identity-through-time unanalyzable and, hence, irreducible.⁶² I turn, then, to the details of this argument.

He begins by posing a puzzle for reductionists, one that has lately been widely discussed: Consider one of Kripke's spinning disks (or Armstrong's spinning spheres), an object made of perfectly homogeneous extended material stuff rotating clockwise.⁶³ Compare it to an otherwise similar and similarly aligned disk that is stationary. If reductionism is true, then persistence of a portion of matter such as that making up the eastern half of a disk must supervene upon the distribution in space-time of instantaneous exemplifications of thin properties, and identity-neutral relations of causal dependence. But the homogeneity of the disks insures that instantaneous states are intrinsically similar; and the distribution is exactly the same (since the disks are the same size and shape, and the period of time under consideration is the same). (If a defender of (R) were tempted to distinguish the spinning disk from the stationary one by appeal to thin distortions in the shape of the spinning disk due to centripetal forces or to contraction caused by relativistic effects, one need only change the example slightly, demanding that the reductionist find non-identity-involving differences between these cases: (i) two disks sitting next to one another but rotating in opposite directions, and (ii) two disks sitting next to one another but rotating in the same direction.⁶⁴)

⁶² IPC, pp. 253-6.

⁶³ Kripke described the disks in unpublished lectures on identity through time; Armstrong, independently, introduced his spheres in "Identity Through Time", in *Time and Cause*, ed. by Peter van Inwagen (Dordrecht: D. Reidel, 1980), pp. 67-78.

⁶⁴ This is the case used in Zimmerman, "Temporal Parts and Supervenient Causation: The Incompatibility of Two Humean Doctrines", *Australasian Journal of Philosophy* 76 (1998), pp. 265-88; cf. esp. pp. 268-9.

Introducing states of motion exemplified by the parts of the disks at instants would mean that “the attempt to analyze cross-temporal identity in terms of causality will be circular” (IPC, p. 245). Even without a conviction on the charge of circularity, one can see why introducing non-supervenient states of motion might be thought to violate (R). Instantaneous states of motion look like properties that would confer strongly diachronically-loaded CPs. If a part of a disk is moving north at an instant, then one might think it must have CPs such as: the power, conditional upon no further properties of the part, to subsequently exist in regions to the north of its present region under perfectly boring (thin) conditions — e.g., there being no other forces at work upon it. Taking such a power as fundamental would seem to violate the spirit of (R) by including something very close to identity-across-time in the supervenience base.

Shoemaker’s argument against (R) based on the disks runs as follows: (i) The differences in the disks consist in different states of motion of their otherwise similar parts — differences that can either be taken as fundamental, or reduced in some way. (ii) Positing fundamental facts about instantaneous velocities would be tantamount to accepting fundamental facts about cross-temporal identity, in violation of (R).⁶⁵ (iii) Treating states of motion as non-fundamental (in a way consistent with (R)) requires finding differences in the thin properties of the disks or in the identity-neutral causal relations among instantaneous stages of the disks. But (iv) there are no differences in any instantaneously exemplified, thin properties of the disks’ parts that could serve to ground these differences in states of motion.⁶⁶ So the differences must be in cross-temporal

⁶⁵ IPC, p. 245.

⁶⁶ This assumption is built into the description of the disks (IPC, pp. 242-3).

relations among parts. (v) Differences in identity-neutral cross-temporal relations within the disks can only correspond to differences in their states of motion if they ground different patterns of causal dependence within the disks.⁶⁷ But (vi) the only way to introduce different “lines” of causal dependence within them is to invoke ““appropriate” causal connections between thing-stages’.⁶⁸ And (vii) the appropriate ones inevitably involve the activation of strongly diachronically-loaded CPs.⁶⁹ Including such CPs in the supervenience base is a violation of (R); so every alternative has led to a dead-end or the violation of (R).

Shoemaker shows that our ordinary ways of describing the properties and powers of physical objects do seem to invoke thick properties and the strongly diachronically-loaded powers they confer⁷⁰; and it is certainly true that the ordinary notion of a state of motion involves identity over time. Still, reductionism will be vindicated if the facts about cross-temporal identity can plausibly be held to supervene upon a catalogue of properties and relations that does not include such properties. The homogeneous disk provides the hardest sort of case for maintaining that facts about identities of the parts supervene upon thin properties and causal dependencies that are identity-neutral. But in the years since Shoemaker gave his argument against (R), many philosophers have taken up the challenge.

The first to do so was David Armstrong — writing about spinning disks (or spheres) at the same time as Shoemaker (Armstrong’s paper is discussed in IPC).

⁶⁷ IPC, pp. 244-5.

⁶⁸ IPC, p. 246.

⁶⁹ IPC, pp. 255-6.

Armstrong agrees that the instantaneously exemplified properties of the disks are in fact the same, and that the differences must be in the shape of paths of identity-neutral causal dependence among the instantiations of properties within the disks — differences in causal “lines” corresponding to the differences in “lines of persistence” within the disks. In the case of two disks spinning in opposite directions, the lines are helices of opposite handedness; in the stationary disk, they are straight. Armstrong takes these differences in causal relations as fundamental. They are admittedly “non-Humean”, not supervening upon local differences in the disks. But, whatever disadvantages such “singularist” causal relations may have, they do not in any obvious way imply that something persists through time, nor do they in any obvious way involve Shoemaker’s thick properties. So Armstrong will deny Shoemaker’s (vii).

More recently, Katherine Hawley has also posited a primitive relation that holds in a different pattern within the spinning and stationary disks. “Any given stage of a disc segment is linked by special relations to some later stages, and not thus linked to others. If a stage is thus linked to stages in the same place at later moments, the disc is at rest; if not, the disc is rotating.”⁷¹ Though not *identical* with a relation of causation or causal dependence, Hawley’s relations play causal roles that ground causal differences. Later temporal parts of segments of the disks are causally dependent upon earlier temporal parts of segments, and the direction in which such causal dependencies propagate, along with the continued holding of the relation itself, is determined by the direction toward which the relation has been tending. But, like Armstrong’s primitive causal differences,

⁷⁰ IPC, pp. 251-4.

⁷¹ Hawley, *How Things Persist*, p. 85.

the differences in Hawley's cross-temporal relation will not satisfy Humean scruples requiring that everything supervene upon locally instantiated properties and spatiotemporal relations.

Ted Sider defends (R) and rejects (vii); but he eschews all non-Humean relations — primitively causal or not. Like Hawley, however, he postulates a special relation within the disks that must play a certain role in something like “laws of motion”, laws rewritten so as not to be about identically persisting objects but about the ways in which the shape of a space-time worm during one period depends upon its shape during earlier periods (in conjunction with other forces). But unlike Hawley, Sider wants this relation to supervene upon the spatiotemporal distribution of purely local properties throughout the universe. He uses the familiar technique of “Ramsification”, in conjunction with Ramsey's “best-system” theory of laws of nature, to define a relation — to be labeled “genidentity” — that plays a certain role in certain kinds of laws.

Sider assumes that there is a common form to anything deserving the name of “the laws of dynamics”: these are laws about the shapes of a special class of space-time worms, ones whose stages are specially interrelated in some way. The genidentity relation is then defined as the relation that appears in the best combination of a candidate for this special relation together with a candidate system of laws in which it figures:

We need to specify *both* genidentity and the laws. Since genidentity requires playing a role in the laws and the laws concern genidentity, we cannot define one without presupposing the other. So we follow a familiar strategy and define the two at once. Consider various ways of grouping stages together into physical

continuants. Relative to any such way, there are candidate laws of dynamics.

The correct grouping into physical continuants is that grouping that results in the best candidate set of laws of dynamics; the correct laws are the members of this candidate set.⁷²

In judging which is the best system of laws-*cum*-genidentity-relation-assignments, Sider appeals only to locally exemplified properties and the spatiotemporal shapes of the regions at which those properties are exemplified. So his approach, whatever its defects (most of which are simply corollaries of the Ramsey-Lewis “best system” theory of laws), has the merit of preserving the global Humean supervenience of the causal relation upon local matters of particular fact, and positing no external relations besides the spatiotemporal ones.

Yet another alternative proposal for saving (R) is to ground differences in the causal lines by positing differences in special “vector-fields” within the disks; and to define the vector properties as those that play a certain role within, again, something functionally like “dynamical laws” but re-written in identity-free language. Defenders of the metaphysics of temporal parts who make this move admit that they are departing from a strict version of Humean supervenience — properties that are “vector-like” are in some sense non-local. A strategy inspired by Denis Robinson, and refined by David Lewis,⁷³

⁷² Sider, *Four-Dimensionalism*, p. 230.

⁷³ Denis Robinson, “Matter, Motion, and Humean Supervenience”, *Australasian Journal of Philosophy* 67 (1989), pp. 394-409; Lewis, “Zimmerman and the Spinning Sphere”, *Australasian Journal of Philosophy* 77 (1999), pp. 209-212. Michael Tooley deserves credit for the idea of introducing instantaneous velocities

makes use of Michael Tooley's way of defining instantaneous properties corresponding to vectors in a theory of motion by Ramsifying the theory with respect to those properties. Tooley's favored case is instantaneous velocity. The various instantaneous velocities that objects can have are defined as the unique properties that play the roles described by the true theory of motion. Such properties must, then, have a place within laws of dynamics.⁷⁴ Lewis and Robinson propose a re-writing of the laws of motion as really laws about material propagation — laws about the direction in which later instantiations of fundamental material properties are generated by earlier ones. Since the vectors are specified in an identity-neutral way, they can be construed as instantaneously exemplified thin properties; and Shoemaker's argument is blocked at (iv).

As in Sider's identity-free re-writing of the candidate laws of dynamics, Lewis's rewritten laws are about diachronic regularities in patterns of property instantiation. If there are not enough regularities in the patterns in a given world, there will not be laws of propagation that are enough like laws of motion to include vector-properties. But, so long as there are series of property instantiations that look, for all the world, like material particles in motion, then there will be laws about their propagation, and vector-properties definable in terms of those laws. Lewis's vector-properties may be non-Humean in some strict sense; but they nevertheless are instantiated at points in space-time, and are not instantiated by persisting things. So, once again, (R) appears to be saved from the disks.

as theoretical properties by means of the Ramsification of laws of motion. See his "In Defense of the Existence of States of Motion", *Philosophical Topics* 16 (1988), pp. 225-4.

⁷⁴ It is a nice question whether the very same family of properties could play some other role in some other possible physical world; but at least they are necessarily tied to laws of dynamics in worlds in which they are instantaneous velocities.

These responses to (R) fall into two categories: Armstrong, Hawley, and Sider posit a cross-temporal relation that plays a fundamental causal role and that distinguishes the disks. Lewis and Robinson may be able to avoid positing any fundamental cross-temporal relations besides spatiotemporal distances; instead, they distinguish the disks by positing differences in the instantaneously exemplifiable vector-properties of their parts — arguably, thin properties, by Shoemaker’s standards.

Shoemaker’s Argument Against (R)

Shoemaker nowhere directly addresses the Lewis-Robinson strategy for constructing thin vector-properties, or the non-causal relation strategies of Hawley and Sider. Their ingenious proposals only came sharply into focus after IPC was written, and Shoemaker has not taken up this particular argument again. To shore up his IPC argument against (R), these holes would have to be filled.

Shoemaker’s defense of (vii), however, is explicitly aimed at the sort of move made by Armstrong. Why does Shoemaker think that strongly diachronically-loaded CPs must be invoked when someone like Armstrong tries to describe the appropriate causal “glue” with which to cement stages of a single piece of matter?

If the instantaneous thin properties of the disks are in fact the same, as Armstrong would likely grant, reductionism implies that the difference must be in the shape of paths of identity-neutral causal dependence among the instantiations of properties within the disks — differences corresponding to the differences in “lines of persistence” within the disks. In the case of the spinning disks, the lines are helices of opposite handedness; in the stationary disk, they are straight. Shoemaker shows how Armstrong can, by helping

himself to the notion of “the appropriate sort of causal relationship” among momentary stages of bits of matter, define a variety of states of motion, such as instantaneous velocity, in terms of the spatiotemporal shape of a region so long as the region is filled by matter that is characterized by the appropriate causal connections. Armstrong can say that, when a “causally connected continuous series of thing-stages” (or “CCCS”) occupies a space-time path with a tangent vector pointing north at a time t , then there is a persisting bit of matter moving with a certain instantaneous velocity toward the north at t . Shoemaker explains how Armstrong could derive the precise velocity from further facts about the shape of the CCCS.⁷⁵ If the property instantiations connected by the causal relation could be construed as *thin*, and the appropriate causal relation as identity-neutral, (R) would then be vindicated.

But Shoemaker claims that the defender of (R) owes us a detailed description of the “appropriate” causal relations corresponding to the differently shaped “causal lines” within the disks.⁷⁶ And he asserts that, in the attempt to do this, someone using Armstrong’s strategy will end up appealing to causal connections among thick properties and their strongly diachronically-loaded CPs — which would be tantamount to giving up (R).

Is there any hope of defining the notion of immanent causality, or the required notion of an “appropriate” causal connection between thing-stages, without the use of the notion of persistence? I do not think so. To do this we

⁷⁵ IPC, p. 246.

⁷⁶ IPC, p. 255.

would have to be able to characterize the causal potentialities of properties without making use of the notion of persistence. We might be able to do this if we *already* had available a notion of a *CCCS* which was not explained in terms of the notion of persistence. If we had this, then instead of specifying the causal potentialities of a property by saying what will happen over time under various conditions to something having that property, we might try to specify them by saying what sorts of *CCCS*s would occur under various conditions when that property is instantiated. But it is precisely in order to define the notion of *CCCS* that we are trying to define the notion of an “appropriate” causal connection. So it now appears that in order to give a noncircular analysis of this notion, we would already have to have one; which is to say that it is not possible to give one.⁷⁷

I find it difficult to build a case against the Armstrong-style defense of (R) from the materials in this passage. Armstrong accounts for the possibility of differences in states of motion of the disks by supposing there could be two series of temporal parts identical in their thin properties but with brute differences in the lines of causal dependence within them. As Shoemaker points out, the defender of (R) will assume that these differences would ground facts about counterfactuals indicative of different states of motion.⁷⁸ For example, had a drop of red paint been splashed on this yellow part of a certain instantaneous disk-stage, a round patch of orange would have appeared on later disk stages further to the north, if the lines of causal dependence within that part of the

⁷⁷ IPC, pp. 255-6.

⁷⁸ IPC, p. 244.

disk bend toward the north; while the orange patch on later stages would remain in the same location if the causal lines are straight. But if Shoemaker grants Armstrong that the causal dependencies between stages support such counterfactual dependencies, Armstrong would seem to have the means to “specify the causal potentialities” of the properties of the disks without any need for direct appeal to identity over time or for indirect appeal to identity over time by means of strongly diachronically-loaded CPs. Take the yellowness of the disk. Armstrong can accept Shoemaker’s point that part of what it is for the disk to be yellow is for it have the conditional power to turn orange when brushed with a little red paint, and to turn green when brushed with blue. But why does Shoemaker think it is impossible for Armstrong to construe this conditional power as one that yellowness confers upon instantaneous disk-stages — a power they have, in virtue of being yellow, to produce certain sorts of CCCSs? I do not see why Armstrong should be barred from describing the property and attendant CPs in this fashion: If a bit of a disk stage has the (thin) yellowness property, then, if some red paint is aimed at a space-time location of a disk-stage that is causally dependent (in Armstrong’s purportedly identity-neutral sense of “causally dependent”) upon the yellow stage, the later disk-stage will be orange; while if the paint is blue, the later causally-dependent disk-stage will be green. On the face of it, these appear to be identity-neutral conditional powers Armstrong can associate with the instantaneous yellowness of a disk stage. And I see no obvious objection to extending this approach to other properties homogeneous matter might be imagined to have.

I suspect that Shoemaker allows himself to proceed rather briskly at this point in his argument against Armstrong because, when he was writing *IPC*, he assumed that *all*

genuine properties were thick properties. Shoemaker had not yet introduced the thick-thin distinction in so many words, but when he presents his theory of properties in IPC, he simply says that (genuine) properties confer enough CPs to entail that what has them has certain persistence conditions: “Since a specification of the essential nature of a property will involve a specification of the powers to which it has the potential for contributing, and since a specification of the powers will say what happens to their subject *over time* given certain conditions, the essential nature of a property incorporates the persistence conditions, that is, the cross-temporal identity conditions, of the things to which it can belong.”⁷⁹ Nowadays, Shoemaker is willing, it seems, to admit that things do have some thin properties; and I cannot find an argument in IPC or elsewhere for the conclusion that *all* properties must be thick. But without the supposition that all genuine properties are thick, there is a large gap in the argument of IPC against an Armstrong-style approach to the disks.

It seems to me, then, that Shoemaker has not succeeded in proving that Armstrong’s singularism about causal dependence cannot account for the differences in the disks. For all Shoemaker has shown, Armstrong may well have the resources he needs to specify the CPs that ought to be associated with properties of the parts of the disks, appealing only to identity-neutral causal dependence between instantiations of thin properties. The more recent reductionist responses to the disks, canvassed above (due to Hawley, Sider, Robinson, and Lewis) also sidestep Shoemaker’s argument. If anti-reductionism is, indeed, crucial to Shoemaker’s system, there is much work left to be done in its defense.

⁷⁹ IPC, p. 253.

What Would the Disk Argument Show?

The homogeneous disk and similar examples provide the hardest sort of case for maintaining that facts about cross-temporal identity supervene upon thin properties and identity-neutral causal dependencies. Even if Shoemaker's use of the disks is not decisive, they may still produce problems for (R). Various objections have been lodged against the attempts by Armstrong, Hawley, Sider, Robinson, and Lewis to render homogeneous substances consistent with Humean reductionism about cross-temporal identity.⁸⁰ Some Humeans, like Ted Sider, have deep commitments to the (in principle) adequacy of local properties and spatiotemporal relations as a supervenience base for states of motion, even in worlds with homogeneous matter. For them, Hawley's non-supervenient cross-temporal relation, Armstrong's primitive causal relations, and Lewis and Robinson's vector-properties, will seem insufficiently Humean.⁸¹ Others will be disappointed that Sider, Robinson, and Lewis are unable to account for differences in states of motion in matter-filled worlds.⁸²

⁸⁰ It must also be reported that some philosophers are quite unimpressed by the disk argument. See, e.g., Craig Callender, "Humean Supervenience and Rotating Homogeneous Matter", *Mind* 110 (2000), pp. 25-43; Paul Teller, "The Rotating Disk Argument and Humean Supervenience: Cutting the Gordian Knot" *Analysis* 62 (2002), pp. 205-210; and Tim Maudlin, *The Metaphysics Within Physics* (Oxford: Oxford University Press, 2007), pp. 170-88.

⁸¹ Sider, *Four-Dimensionalism*, pp. 229-30.

⁸² Zimmerman, "One Really Big Liquid Sphere: Reply to Lewis", *Australasian Journal of Philosophy* 77 (1999), pp. 213-15. I do not explicitly discuss Sider's solution there, but it is clear that he will have to reject as impossible many apparently conceivable cases of homogeneous matter in different states of

Suppose, then, that none of these approaches is adequate; and that (R) is defeated by cases of homogeneous matter in motion. Shoemaker might still not get everything he wants. According to non-Bohmian interpretations of quantum theory, the matter in our universe is not, or not always, precisely located in space; and its parts or portions are not, or not always, re-identifiable over time. Our matter nevertheless seems to consist, ultimately, of subatomic particles; and there is no obvious reason to think these particles must be made of some further homogeneous substance. In that case, even if homogeneous disks would require properties that confer diachronically-loaded CPs, that fact alone would not show that any causally efficacious properties instantiated *in the actual world* confer strongly diachronically-loaded CPs. And, even if there were such stuff, further argument would be needed for the conclusion that objects like animals and persons have any properties besides thin ones. One might think that the need for thick properties in the case of homogeneous substances would spread; but I do not see why this should be so. In IPC, he seems to rest his case against (R) entirely upon the difficulties with the spinning disk.⁸³

If the failure of reductionism is as important to Shoemaker's metaphysics as I shall claim, he could use an alternative argument against (R); and, for reasons that will emerge, it would be best if it implied that a person has thick properties it does not share with any coincident objects. The mere failure of (R) in cases of homogeneous matter would not directly lead to this result. Two very brief arguments against (R) appear in PR.

motion — some taken from worlds full of matter, but many from insufficiently complex worlds of other sorts. For a candid description of the limitations of his approach, see Sider, *Four-Dimensionalism*, pp. 233-6.

One of them concerns artifact identity.⁸⁴ I ignore it here, since it would not be directly relevant to the question whether persons must have thick properties distinguishing them from hunks of matter, animals, and bodies; and my criticisms of it would have little to do with the topics discussed in this essay.⁸⁵ The other does target personal identity specifically.⁸⁶ It seems to me to fail, however, for a reason that will emerge in the discussion of Shoemaker's functionalist theory of the mind, below.⁸⁷

The Importance of Anti-Reductionism within Shoemaker's Metaphysics

If (R) is false, cross-temporal identities or thick properties are required in the supervenience base for persistence-facts, and the complete story of the physical world cannot be told without mentioning either thick properties or at least brute identities between a thing existing at one time and a thing existing at another time. If the failure of

⁸³ IPC, p. 255.

⁸⁴ PR, p. 113.

⁸⁵ The argument's brevity makes it hard to assess. But the idea seems to be that the description of the CPs conferred by the properties of a car, for instance, will include conditions mentioning our beliefs about persisting cars; so any attempt to give persistence conditions for cars in identity-neutral terms will fail, because it will need to mention causal relations involving these "identity-tainted" properties; and that would leave car-identity primitive and non-reducible. I strongly suspect that the facts (vague as they might be) about the conditions under which we would be willing to call something "the same car" can be specified without mentioning car-identity. And if they can, I do not see why the notion of "same car" involved in our beliefs about persisting cars should be thought to import a kind of primitive identity relation into the CPs conferred by car-properties.

⁸⁶ PR, p. 94.

⁸⁷ See note 107 for discussion of the argument.

(R) requires the inclusion of thick properties in the physicalist's privileged supervenience basis, then thick properties must be genuine — natural, causally relevant, not mere-Cambridge, etc. If (R) were true, however, then one might at least worry that Shoemaker's thick properties would have no causal work left to do — the full story about what it takes for objects to persist could be told in terms of thin properties.

This result would play havoc with his proposed answer to the “Too Many Minds” objection. If mental states are causally efficacious (as both common sense and Shoemaker's functionalism allege), and if thin properties do all the causal work, then there are indeed many minds wherever there are many coincidents. The mental properties, like all genuine properties, would have to be thin; thin properties are shared among coincident entities; and so they would have to be shared among person, animal, aggregate, and whatever else is coincident with a human being. Conversely, if Shoemaker can make a case that there must be genuine properties exemplified *only* by the person, this would open up the possibility of identifying mental properties with just these, and denying that any properties of the coincident things are of the right sort to play the functional role of mental states.⁸⁸ In the final section, I shall examine Shoemaker's attempt to implement this strategy.

This worry about the implications of reductionism may not be terribly pressing. A promising line of defense is simply to deny that the truth of reductionism would leave

⁸⁸ Of course one might relax the degree to which properties must be causally relevant in order to be genuine; or one might relax the degree to which mental properties must be genuine in order to do their jobs. Perhaps being in a certain mental state need not correspond to the instantiation of a genuine property, but only to the instantiation of genuine (thin) properties in conjunction with the satisfaction of certain potentially “grue”-like conditions. This is not, however, the way Shoemaker seems to want to go.

thick properties with absolutely no part in the causal story; perhaps there is simply more than one story to tell, and no *one* way of telling it is the most fundamental one, excluding the others. Shoemaker notes that some might regard his thick properties as mere conjunctions of thin properties and sortals; while others might regard his thin properties as mere disjunctions of his thick properties. And he considers a third possibility: the view that no choice is necessary, because both sorts of property are equally fundamental.⁸⁹ If, in this context, “fundamental” means “genuine” — i.e., natural, properly invoked in causal explanations, etc. — then I take it that Shoemaker himself now accepts the third view. He always reserves the term “property” for his sparse concept of the *genuine* property; and he is willing to describe both thin and thick properties *as properties*, individuated by the different sets of CPs they confer upon the things that have them.

Shoemaker’s System Hangs Together Better Without (R)

Still, it would be best, for Shoemaker, were (R) false. When Shoemaker’s physicalism and his views about the physical realization of mental states are combined with his metaphysics of coincident objects, there are consequences that, on the face of it, seem quite bizarre. But if (R) is false, and if there are coincident objects, than he has the resources to make these consequences seem more palatable. I begin by showing what happens when Shoemaker’s version of physicalism is combined with the doctrines adumbrated thus far.

⁸⁹ S&B, p. 303.

Commitments to a thoroughgoing physicalism about objects and properties of all sorts are often expressed as supervenience theses. Although rejecting a physicalism that would have all facts whatsoever supervening upon the distribution of thin microphysical properties, Shoemaker wants to remain a physicalist in a couple of senses of that slippery term. For one, he wants to be a physicalist about mental properties or states; and he formulates physicalism about the mental in terms of his theory of realization (discussed in section II):

- (5) For every mental property G , if x is a human being and x has G , there is a physical property F that realizes G in x .⁹⁰

Given his definition of “realization”, (5) is a straightforward statement of the supervenience of the mental upon the physical.

Many would regard (global) microphysical supervenience as the weakest thesis that still deserves to be called “physicalism”. But Shoemaker cannot accept typical formulations of such a supervenience claim. Inasmuch as they are made of the same fundamental particles, the body, organism, and aggregate associated with me must be extremely similar (to say the least!) on the microphysical level. But recall Shoemaker’s acceptance of (4): the existence of microphysically indiscernible coincident entities, only one of which has mental states. (4) contravenes many statements of the global supervenience of everything else upon the microphysical; the mental properties of a thing do not supervene upon, are not determined by, the microphysical properties of that

⁹⁰ This is the realization₁ or “same-substance realization” of PR.

thing.⁹¹ Whether something is a mere aggregate or an organism or a person cannot, therefore, supervene upon just the nature of its microphysical parts and their arrangement and their relations to the wider microphysical environment. Shoemaker still wants to be a physicalist, maintaining that “ultimately what determines the mental facts are the microphysical facts.”⁹² So he formulates his own “coincidence-friendly” version of the supervenience of persons and the mental (or that part of the mental that is intrinsic) upon the “maximal microphysical states of affairs” in which the parts of person, animal, body, and aggregate are involved:

- (6) For every human person x and coincident nonperson y , there is a maximal microphysical state H such that x has H , y has H , and for every intrinsic property I of x or y , necessarily, if something has H , then it is coincident with or identical to something that has I .⁹³

Together, doctrines (1)-(6) have some interesting consequences. I begin with consequences for the theory of realization. First of all, realizer properties insure that whatever has them has the property realized:

- (7) If F realizes G , then, if something has F , then it has G . (From (2) and (3))

⁹¹ For classic formulations of supervenience inconsistent with (4), see Jaegwon Kim, “Concepts of Supervenience”, reprinted in Kim, *Supervenience and Mind* (Cambridge: Cambridge University Press, 1993), pp. 53-78.

⁹² RMRC, p. 6.

⁹³ RMRC, pp. 7-8.

By (3), the thing with F is guaranteed to have the subset of CPs associated with G , and by (2) this is sufficient for its having G .

But then there must be physically discernible coincidents. (4) implies that human persons are coincident with non-thinkers; (5) that thinking persons have physical properties that realize their mental properties; (7) that anything with those physical properties would itself be thinking. So, the coincident non-thinkers must *not* have these physical properties:

- (8) For every human person x , if x has a mental property G , then there is a coincident nonperson y and physical property F such that x has F but y does not. (From (4), (5), & (7))

According to (6), the coincidents must have *some* physical properties in common; so coincidents share some but not all of their physical properties:

- (9) For every human being x and coincident nonperson y , if x has mental states, then:
- (i) there are physical properties had in common (e.g., a maximal microphysical state and whatever is entailed by it), properties that entail neither the persistence conditions of x nor those of y ; and
 - (ii) physical properties not had in common (e.g., physical realizers of x 's mental states). (From (8) & (4))

With (8) and (9), we have reached a view that will strike many as quite bizarre: What possible rationale could there be for thinking that things which share the same maximal microphysical state differ *physically*? It follows from the theses (1)-(6) to which Shoemaker is committed. But, at least on first blush, there would seem to be something implausible about positing *physical* differences among microphysically indiscernible objects. Some will think the seemingly bizarre conclusion makes evident that there is something wrong with Shoemaker's commitments.

If Shoemaker's arguments against reductionism were successful, they would provide a response to this objection, based on his metaphysics of properties and persistence. (1) and (2) are parts of the theory of properties having nothing to do with persistence or coincidence. Putting these two theses together with his arguments against (R), arguments that are also independent of the metaphysical doctrines (3)-(6), Shoemaker can construct an argument for a closely related conclusion: Supposing one thought that there *were* coincident objects with different persistence conditions (and, after all, differences in persistence conditions are presumably one of the main philosophical motivations for positing coincident objects), the presence of physical differences in coincident objects follows immediately from the theory of properties. In other words, there are physical differences among microphysically indiscernible objects, so long as there are coincident objects at all. This argument does not, on the face of it, presuppose anything about realization or physicalism; it depends upon the argument against (R) found in IPC, and criticized earlier in this section. If the conclusions of IPC could be made to stand for reasons similar to those adduced, coincident objects would have to differ in many of their causally relevant physical properties, whatever one might think

about theses (3), (5), and (6) — Shoemaker's claims about realization, mental realization, and microphysical supervenience. Thus, assuming the failure of reductionism and the need to posit causally significant thick properties, Shoemaker can point to some confirmation, from his theory of properties, for the thesis that coincidents differ physically despite precise physical similarity at the micro-level; and offer an explanation of the respects in which the unshared physical properties differ. They differ in the causal powers they confer in certain conditions — conditions in which the careers of the coincident things would come apart. Unfortunately, if I am right, the arguments against reductionism are far from airtight.

VI. Functionalism and Coincident Objects

Functionalisms Old and New

I conclude with an exploration of Shoemaker's recent use of his theory of properties and CPs in the elaboration of his functionalist theory of the mind; and with a direct argument, based on Shoemaker's commitment to functionalism, for the conclusion that persons must have the same mental properties as the animals and bodies with which they are supposed to coincide.

Shoemaker's functionalism has undergone subtle changes in recent years. Formerly, he presented his reductive functionalism in the following fashion.⁹⁴ Let T be the psychological theory mentioning all the mental states to be reduced, a theory specifying their causal interrelations and causal connections with behavior and stimulus

conditions. “Tx” is the result of attributing a repertoire of psychological states to x, specifying that, in x, they are causally related to stimuli, behavior, and one another as T says they should be. Let “ $(\exists z^1 \exists z^2 \exists z^3 \dots \exists z^n)Tx$ ” represent the result of Ramsifying the theory so that it no longer mentions psychological states by name, but merely says that there are some properties z^1, z^2, z^3, \dots that, in x, play these causal roles. Then, if the predicate “is in pain” in the psychological theory T was replaced by z^{27} , “being in pain” can be reductively defined:

$$(D16) \quad x \text{ is in pain} =_{df} (\exists z^1 \exists z^2 \exists z^3 \dots \exists z^n)(Tx \text{ and } x \text{ has } z^{27})$$

Due (at least in part) to George Bealer’s recent attacks upon “ontological functionalism”⁹⁵, Shoemaker has altered his account subtly. Shoemaker agrees with Bealer that it would be unacceptable to identify *being in pain* with a “second-order property” (the property of having some property or other that plays the z^{27} role). Both Shoemaker and Bealer worry that such second-order properties would be epiphenomenal; and in that case, the functionalist account fails on its own terms, attributing to the first-order properties the causal roles that are supposed to be played by the states identified with the second-order properties.⁹⁶ If the (D16)-style functionalist reduction of the mental were taken to imply such an identification of pain with a second-order property, Shoemaker would now reject it. In response to these worries, Shoemaker insists that the relation between a property like *being in pain* and its realizer is not an instance of the

⁹⁴ See “Some Varieties of Functionalism”, reprinted in *Identity, Cause, and Mind*, pp. 261-86.

⁹⁵ Bealer, “Self Consciousness”, *Philosophical Review* 106 (1997), pp. 69-117.

relation between *having a property satisfying such-and-such causal role* and the property that plays the role. It is instead more like the relationship between a determinable and one of its determinates. He spells out the relationship more precisely in terms of his theory of properties, and the account of the realization relation described in section II, above: For one property to realize another is, in part, for the latter to confer a proper subset of the CPs conferred by the former. With realization understood according to this model, the relation between a determinable property and a determinate falling under it is an instance of the realization relation. Shoemaker thinks that reflection upon the ways in which determinables can be causally relevant, even in the presence of determinates, will make clear that mental properties are not second-order properties in any sense that would threaten their causal efficacy. They have their own causal contributions to make, despite the fact that they are realized in more determinate neurophysiological properties.

Instead of a definition in the style of (D16), Shoemaker now prefers the following sort of functional characterization of a psychological property P: “P is the unique property that (a) plays the relevant functional role and (b) is implied by every other property that plays it.” Shoemaker offers a more formal version of this idea: Let P be the “property to be defined” (in the present case, “pain”), let “ $\exists F_1 \dots \exists F_n (\dots F_2 \dots)$ ” be the “Ramsey sentence” of the true psychological theory that contained “P”, let “F27” be the variable replacing “P”, and let “ $\exists! F$ ” mean “there is a unique F”. Then “pain” is defined as the property a thing x has iff:

⁹⁶ For more on this objection, and Shoemaker’s response, see Bealer, “Self-Consciousness”; and Shoemaker, RMC.

$\exists!F_1 \dots \exists!F_n \{ (\dots F_{27} \dots) \ \& \ [\forall G_1 \dots G_n \text{ (if } (\dots G_{27} \dots) \text{ then } \forall y \forall i (G_{iy} \rightarrow F_{iy}))]$
 and x has F_{27} } [Letting “ i ” range over the numbers that figure in the property
 variables.]⁹⁷

Pain, then, is the property that plays the F_{27} role and is implied by every other such property.

Determinable CPs and Realized Properties

What are the conditional causal powers like that are said to be shared by realized properties and realizing properties? Are they all powers to produce highly determinate effects in extremely precise circumstances? If so, how plausible is it to suppose that there remains a set of powers common to all instances of pain — whether in humans, dolphins, or aliens? Creatures with very different physical natures, suited for very different environments, will suffer bodily injury under different circumstances and respond to it differently as well. Could there be any highly determinate circumstances that are common to every single situation in which pain could possibly be realized, no matter the toughness of a creature’s hide or exoskeleton or outer membrane, no matter the nature of the neurons or chips or silicon filaments playing the role of nervous system in the thing’s head or feet or bowels, no matter the type of running, flying, or curling up it attempts when injured, etc.?

These considerations ought to lead the functionalist to say that the only CPs common to all instances of pain are *not* highly determinate. Instead, a functionalist

⁹⁷ PR, pp. 18-19

invoking Shoemaker's theory of realization should say that it is only causal powers involving highly determinable effects and highly determinable triggering circumstances that are in the subset corresponding to *being in pain*. I will argue that, given only highly determinable conditions and effects in the "CP-profile" of mental properties, it would be misleading to say, as Shoemaker does, that some effects are due to the activation of *only* those causal powers of the realizer that all realizers of pain have in common.

I formulate my worry for a determinate-determinable case that Shoemaker takes to be an instance of the same basic type as mental realization. Shoemaker invokes Yablo's pigeons, one trained to peck at scarlet things, the other trained to peck at red things of any shade.⁹⁸ The determinable *redness* is said to correspond to a list of CPs, the ones common to things that are scarlet or brick-red or dark pink or.... When the pigeon trained to peck only at scarlet things takes a poke at a scarlet sample, it is CPs peculiar to scarlet that are activated; but when the pigeon trained to peck at *red* things takes a poke at the same scarlet sample, the CPs that provoke the pecking are supposed to be just ones that are shared among all red things. This justifies our saying that, even though the sample is scarlet, it is not its being scarlet so much as its being red that causes the second pigeon's reaction. Similarly, when the fire causes a pain in my hand and I withdraw my hand, we want to say it was the pain that causes my action, and that citing the pain is a more apt explanation of what caused my action than citing P1 — the particular physical realizer of pain in me. Shoemaker applies the same reasoning in this case. The CPs that are common to all instances of pain cause me to withdraw my hand from the fire, so it is

⁹⁸ The pigeons make their appearance in Stephen Yablo, "Mental Causation", *Philosophical Review* 101 (1992), pp. 245-80.

appropriate to explain my behavior by pointing out that I exemplified *being in pain*, the more determinable property all creatures in pain share, not P1. When the CPs involved in causation of a bit of pain behavior “were all ones belonging to the subset which the property of being in pain and the property P1 both confer”, then “[i]t is qua realization of pain that P1 made its contribution to causing the behavior; for the conditional powers it conferred that are independent of those conferred by the property of being in pain were irrelevant to its making this contribution.”⁹⁹

But could all the CPs peculiar to P1 be “irrelevant” to P1’s contribution to my pain behavior? Consider again the analogous case involving red and scarlet. Suppose this is the “beginning” of the list of CPs under the determinable *being red*.

x is red

1. $Ax, \rightarrow Bx$ in S^1
2. $Cx, \rightarrow (\exists y)Dy$ in S^2
3. ...

These CPs must themselves involve determinable or at least disjunctive manifestation and triggering conditions. They cannot imply that pigeons of the scarlet-pecking sort will peck in the presence of things that have this general list of CPs common to all red things; but they cannot imply that they do *not* peck, either. The CPs must be such that, when things have them, and are in ordinary conditions, the wavelengths of white light that are reflected and that are absorbed *fall within a certain range*; but they cannot imply that they take *precise* values (again, under ordinary lighting conditions), or else *being red* would not be determinable after all — it would turn into *being such-and-such particular*

⁹⁹ RMC, p. 79.

shade of red. So if the list of CPs associated with highly determinate properties is to overlap with others under the same determinable so that the common subset is the CPs associated with the determinable, the list of CPs for the determinate must include highly determinable CPs. But whenever something with a particular shade of red exercises a CP common to all red things by reflecting and absorbing light, it will also exercise a CP peculiar to its shade. There is no possibility of an occasion upon which the *only* CPs that are triggered belong to the subset common to red things. In the first CP above, let “ $\rightarrow Bx$ in S^l ” be the power to absorb and reflect light within a certain range when bombarded by ordinary sunlight of a specific intensity. Objects with a determinate shade of redness will have a CP in which the condition is A and the power is “ $\rightarrow B^*x$ in S^l ”, with “ B^* ” being the absorption and reflectance of wavelengths falling at a precise point somewhere within the range specified by “ B ”. In the case of the red-pecking pigeon, are we to believe that no CP involving a precise shade, such as $\rightarrow B^*x$ in S^l , was activated or exercised? That would be to suppose that a “determinable event”, the occurrence of something’s having a certain determinable property, could be occur without the occurrence of a “determinate event”, the occurrence of something having a determinate property falling under the determinable. This supposition is highly problematic — something’s having mass, but no particular mass, color but no particular color, etc. I should not want to say it is impossible, but it ought to be surprising to us to learn that such events occur.¹⁰⁰

¹⁰⁰ Perhaps quantum mechanics will be thought to saddle us with such mysteries, in the end; but it would be surprising were quantum theory to have an important role in explaining the differences in the behavior of the trained pigeons.

To return to the case of pain and P1: What could the CPs be like that are common to all creatures who have the property of being in (a certain sort of) pain? They are powers common to pain when it is realized in humans and other creatures physiologically very different from us, both actual and merely possible. Mustn't the common powers, just as in the case of red, involve highly determinable properties — powers to engage in or undergo things describable only in the most general terms, such as “moving away from the source of the stimulus” and “having the integrity of one's boundary compromised”? But if so, in each particular instance of a pain's causing something, there will be no such thing as a causal interaction that involves “just the powers common to these”, with more determinate powers inactive, unexercised. If a power is activated that has a determinable property as its manifestation, a power with a more determinate manifestation must also have been triggered.¹⁰¹ “Moving away” will involve very different activities for the (presumably merely possible) aliens and for us. It will be realized in different motions of limbs, formations of pseudopods, or what-not; and having boundaries compromised by foreign matter will be realized in different types of events as well. So in each case, there will be a CP of the realizer property that is peculiar to it (and foreign to the other realizers of that realized property); and, if a mental CP is activated, so is one of these.

Suppose, for example, that I have the property of being in pain (P); that this is realized in some type of neural state (N); and that the pain causes me to yell in a certain specific way (Y). One power activated in this case, the one common to all instances of P, is, we may suppose, the power to make a noise of some kind or other (not yelling, since some creatures can only wimper or squeak when in pain; but some noise, loud or small

¹⁰¹ Barring quantum mechanical shenanigans and fundamentally indeterministic powers.

— a highly determinable type of event, E) when there is a suitable surrounding medium (like air) to carry the sound (circumstances S). This is a power that P confers conditionally upon a thing's also having some other conjunction of properties A that I have then (e.g., the ability to make noise, a desire to let others know I am in pain, etc.). So the power activated is a power to bring about the highly determinable E in highly determinable S conditionally upon having A. P's list of CPs can begin, then, with:

Px

1. $Ax, \rightarrow Ex$ in S

...

And, on Shoemaker's account of realization, the neural state realizer in me will include this CP, but also some others — such as, presumably, the second in the following list:

Nx

1. $Ax, \rightarrow Ex$ in S

2. $Ax, \rightarrow Yx$ in S

...

Call these “CP 1” and “CP 2”. Could CP 1 be the *only* power of the realizer, N, that is activated in the production of E? The neural state in question confers the power to produce vibrations of vocal chords that realize yelling in me, and so the power to produce Y, conditional upon A. This is distinct from CP 1, the power to bring about the more general making of a sound, conditional upon A. And if the making of a sound is due to

my yelling in a certain way, then surely the activation of CP 2 cannot be regarded as dormant, as uninvolved in and “irrelevant” to the production of E. But CP 2 is not one that every instance of P confers. So some of the *other* powers of N, the ones not shared with all realizers of P, are indeed active upon the occasion of my making a noise expressive of pain (a yell, as it turns out). How, then, could they be “irrelevant” to N’s causal contribution to E?

Perhaps I am reading too much into Shoemaker’s claim about the irrelevance and inactivity of unshared CPs. Perhaps this is all that Shoemaker means to be saying when he speaks of the irrelevance of a CP like CP 2: if one is looking for a causal explanation of an effect of a physically realized property, and this effect is highly determinable, then it is more appropriate to cite the activation of a highly determinable CP conferred by the realizing property than to mention a more determinate one — even if the activation of the more determinate CP is just as much a part of the causal history of the effect. More determinate CPs like CP 2, peculiar to the realizer, were also involved in the production of the effect; but since their manifestations include effects that are overly specific relative to the very general nature of the effect to be explained, it is not appropriate to mention them.

If that is all there is to his claim, I have no objection. But it is hard to square the weaker reading with what he says about particular examples. For instance:

Suppose physical property P1 is one of the realizers of the property of being in pain, and that in a particular case the causing of a piece of “pain behavior”, say taking an aspirin, involved the exercise of some of the conditional powers

conferred by P1. But suppose further that these conditional powers were all ones belonging to the subset which the property of being in pain and the property P1 both confer.¹⁰²

Here it sounds as though we are being asked to imagine the list of CPs associated with both P1 and being in pain, to look at the event which is my taking some aspirin, and to ask what CPs were activated when P1 and being in pain caused me to put the aspirin in my mouth. And the answer is supposed to be, none that are peculiar to P1.

That he intends something like this is supported by a subsequent analogy. He claims that the case in which just the common CPs are activated in producing an effect is comparable to the following case: “Someone’s dying might be said to be a consequence of the fusillade of shots from the firing squad, but since many of those shots may have missed it may be that what caused his death was not the fusillade as a whole but some part of it.”¹⁰³ The CPs associated with a property are like parts of it, he argues; and not all of them are being manifested all the time, in the bringing about of every effect in which the property is causally implicated. I can see how the CPs that would be activated when my pain causes me to wince might not be exercised when my pain causes me to make a noise; but I do not see how the CPs that are activated when I yell are not exercised when my pain causes me to make a noise, *and the noise is my yelling*. At the very least, we shall have to hear a good deal more about what it means for an event of making a noise or swallowing an aspirin to “involve the exercise of” some CPs but not

¹⁰² RMC, p. 79.

¹⁰³ RMC, p. 81.

others, or for a CP to be “irrelevant” to the contribution another CP makes to such an event. It seems to me some very peculiar elucidations of these expressions would have to be given if a power like CP 2 is going to be “irrelevant” to my making a noise when in fact the power is manifested in my yelling, and yelling is the only noise I then make.

Functionalism and the Minds of Animals and Bodies

I turn now to the question whether Shoemaker has an adequate response to the “Too Many Minds” objection — in particular, to the claim that, given his version of functionalism and his views about coincident objects, if I am in pain, then so are several other physical objects coinciding with me.

Shoemaker mentions three things that he supposes are distinct from, yet co-located with, a person such as myself: (1) the aggregate of matter that presently constitutes my body, but that will soon become more and more widely scattered even though I will not; (2) the human organism or animal that was a fetus before Zimmerman-the-person ever existed, and that could perhaps cease to coincide with me were I to undergo a cerebrum transplant; and (3) my body, a thing that will still be around for some time after the organism dies, to be cremated or buried by others. The four of us differ from one another in our persistence conditions. And since “thick” physical properties proliferate in the presence of differences in persistence conditions, Shoemaker has provided some reason to suppose that the physical property realizing pain in Zimmerman, the person, is not one that could be possessed by any of the others. Still, how are the differences in the physical properties associated with person, human animal, body, and aggregate of matter supposed to make it less likely that all three will be in pain if any one

of them is? Suppose one grants that the animal co-located with me cannot have the property that realizes pain *in me*; how does that support the thesis that there is not some *other* physical property exemplified by the animal that realizes pain *in it*? The conjunction of a certain thin property with the having of the persistence conditions appropriate to persons is equivalent to a causally efficacious, genuine, etc. property, namely *being in pain*. Why shouldn't the very same thin property, in conjunction with the having of the persistence conditions appropriate to body or animal, also be causally efficacious and genuine? If it is, how could it fail to satisfy the pain role relative to the body or human animal that exemplifies it, if the pain role is part of a functionalist theory that mentions only stimuli, overt behavior, and internal states neutrally described?

Does the human animal or the body have a thick property that is adequately described by a functionalist definition of the sort Shoemaker advocates? If it does, then the "Too Many Minds" objection has not been blocked. In fact, Shoemaker provides us with a recipe for finding such properties. Take the thick properties P1, P2... that are the mental states in the repertoire of a given person. For each of these, by Shoemaker's supervenience thesis, there will be a corresponding thin property y^1, y^2, \dots such that the conjunction of y^1 and the sortal *person*, y^2 and the sortal *person*, ... realizes (or is at the very least equivalent to a thick property that realizes) P1, P2,.... The properties y^1, y^2, \dots are thin micro-states the person has when and only when it is in P1, P2,....; they are the thin supervenience basis for there being a person coincident with whatever has them that has P1, P2,.... Given Shoemaker's commitment to his form of coincidents-friendly supervenience upon the microphysical, there must be such states. Take the same series of thin properties y^1, y^2, \dots and conjoin with each the sortal *organism*; call the resulting

properties Q1, Q2,... These must, I shall argue, realize the mental states P1, P2,... in the animal. (A similar result can be reached using the sortal *body*.)

The causal profiles in virtue of which P1, P2,... are pains, pleasures, etc., and in virtue of which their realizers in the person are realizations of *being in pain, taking pleasure*, etc., are (according to Shoemaker's functionalism) defined in terms of stimuli, causal relations to one another, and overt behavior. Surely the environmental stimuli impinging upon the sense organs of the person are the same as those impinging upon the sense organs of the animal, as long as they remain coincident. And the behavior produced by activity in the brain, if it is genuinely stripped of the presumption of mentality (as a reductive functionalist wants it to be), must surely be the same as well. At least, what might be called "thin behavior", the exemplification of physical properties implying that the animal's arm goes up and that the person's arm goes up, and that other motions and immobilities open to persons and animals and bodies, will be the same; and it would be cheating to say "the animal's states don't really satisfy the functionalist theory, because the bodily motions and other seeming-behavior they cause are not *really* the kind of behavior appropriate to things with mental states." Suppose "P27" is the term for "pain" in our psychological theory — the sort of state that is typically causally intermediate between stimuli such as tissue damage and behavior such as nursing an injured limb. When a mental state realizer of P27 occurs in the person, the corresponding thin micro-state y^{27} occurs in person, animal, and body; and the conjunctions of y^{27} with the sortal *animal* and the sortal *body* are also then and only then exemplified in the animal and human body, respectively. Call the first such conjunction Q27, the second R27. Since these properties play an exactly parallel causal role relative to stimuli,

behavior, and thick states of the nervous system corresponding to the states that realize mentality in the person, why do they not realize pain in the animal and the body? Q27 and R27 are “thick”, like the realizers of mental states in the person; they are typically produced by damage to the animal’s or body’s tissue; they typically lead to nursing of limbs and other avoidance behavior; they typically degrade performance of tasks and have other effects upon the instantiation of thick properties that *should* be the realizers of *other* mental states in these creatures, if they fit the right overall causal profile. And, since the causal roles of all these potential realizers of mentality in animal and body match up almost perfectly with the realizers of the mental states in the person, how can Shoemaker deny that they fit the overall causal profile?

It must be admitted that these potential thick realizers of mentality in the animal and body differ in their causal roles under certain extreme, seldom-exemplified circumstances. In a successful cerebrum transplant, Shoemaker thinks the pre-transplant mental states of the person will produce their usual effects in the person who survives the operation with a new body. If the person is in P27, for instance, as the transplant occurs, the typical effects of pain are to be expected in the person who acquires the new body. However, the candidate realizers of pain in the animal and (the original) body, Q27 and R27, will have no tendency to produce their usual effects in the (decerebrated) animal or body under these circumstances. But do such minor differences in extreme circumstances (usually near the beginning and end of the career of one of the coincident objects) show that the candidate realizers do not satisfy the causal roles identified in the psychological theory T? Is T so precise as to discriminate amongst the thick states of the different coincident objects, implying that P27 plays the pain role in the person, for

instance, while Q27 and R27 do not play this role in their proper subjects? If a functionalist theory of the mind is to be at all plausible, it must allow that the functional definitions of psychological terms leave room for occasional anomalies. This is especially true of theories like Shoemaker's that make use of ordinary psychological categories when specifying the content of the theory T. In order to leave room for anomalies, functionalists generally describe a psychological role as "the state that *typically* causes..." and "...the state that is *typically* caused by...". Naturally, a coincident trio of person, animal, and body remains coincident for almost all of the time that any of the three exists. But then, in *typical* circumstances (ones in which person and animal and body remain coincident), Q1, Q2,... and R1, R2,... will be just as eligible to be satisfiers of T, relative to organism and body, respectively, as the physical realizers of P1, P2,..., relative to the person. The few circumstances in which the different families of properties confer different CPs can hardly count against the Qs and Rs as satisfiers of T, given the "typically" qualifications with which the psychological theory is riddled.

Since I first presented the above objection (and under pressure from Eric Olson, who hit upon the same objection, quite independently¹⁰⁴), Shoemaker has responded to it by denying that

the causal roles of mental states should be thought of as idealizations, e.g., as describing the roles played when the subject is rational. The roles include

¹⁰⁴ See Olson, "What Does Functionalism Tell Us About Personal Identity?", *Noûs* 36 (2002), pp. 682-98.

My criticisms were included in the version of this paper that Shoemaker heard as a reply to his RMRC, in

whatever mental and behavioral effects mental states are apt to have, including those that occur in wishful thinking, self-deception and the various sorts of mental illness.¹⁰⁵

Shoemaker admits that, on his view, “it is bound to be the case that the coincident entities will have states whose causal roles are similar to those of the mental states of the persons.”¹⁰⁶ But they will not *really* satisfy the *precise* roles described in the true psychological theory T. They will only seem to do so if the psychological laws in T are treated as “idealizations that do not allow for what happens in departures from rationality and in mental illness.” The idea seems to be that, once the categories of commonsense psychology are made more precise within the framework of a truly scientific psychology, the need for qualifications like “the state that *typically* causes...” and “the state that is *typically* caused by...” will no longer be necessary. So long as the creatures with psychological persistence conditions have the properties playing these very precise roles, “and human animals have states that to some extent approximate to having them, then the former creatures have the mental states and the human animals don’t.”¹⁰⁷

First, I lodge a minor complaint about Shoemaker’s description of the situation. Above, I gave a recipe for finding thick properties Q1, Q2,... and R1, R2,... of animal and body that play precisely the same causal roles in the lives of these creatures as mental

2000, at the Chisholm memorial conference; but Olson had no opportunity to see my paper before writing his.

¹⁰⁵ Shoemaker, “Functionalism and Personal Identity—a Reply”, *Noûs* 38 (2004), pp. 525-33.

¹⁰⁶ Shoemaker, “Functionalism and Personal Identity—a Reply”, p. 532, note 9.

¹⁰⁷ Shoemaker, “Functionalism and Personal Identity—a Reply”, p. 531.

states play in persons, with small exceptions at the margins of life. Shoemaker is surely understating the case when he says that these thick properties “to some extent approximate” the causal profiles of mental states. They *exactly coincide* in all but the most extreme circumstances. Shoemaker is unwilling to allow that a person can travel from one place to another by means of a transfer of information.¹⁰⁸ So the brain, or some physical object that has gradually taken over the functions of the brain, must be kept going, if the person is to survive. This means the only differences between the causal profiles of P1, P2,... and their rivals R1, R2,... and Q1, Q2,... will be under extreme conditions. Their causal roles come apart if a brain, still functioning enough to keep someone’s psychology going, manages to survive the death or loss of “its” animal or body. (How often does that happen? And for how long?) They come apart if the body or animal manages to survive without its original (and properly functioning) brain (or some cybernetic successor). Their causal roles do much more than “to some extent approximate” one another if they differ only in these kinds of cases!

But, more importantly, would the filling in of the causal roles of mental states, to take account of “what happens in departures from rationality and in mental illness”, really obviate the need for “typically”-clauses in the statement of even the most carefully tidied up psychological theory? The conditions that engender bouts of irrationality and other exceptions from the norm for mental events will, often, be thoroughly *non-mental*. And these non-mental causes of aberration will come from an open-ended variety of sources — drugs, brain lesions, blows to the head, etc.; and who knows what kinds of malfunctions in aliens? No psychological theory could take account of all these physical,

¹⁰⁸ Shoemaker, “Brown-Brownson Revisited”, *Monist* 87 (2004) pp. 573-93; cf. esp. p. 591, note 1.

non-mental causes of deviation from the norm — at least, not if it is a theory about multiply-realizable psychological categories, as opposed to a theory about the complete physiology of the brains (and brain-surrogates) of every *possible* system that could subserve psychological functions. Surely the psychological terms we use could not derive their meaning from a theory as incomprehensibly complex as all that. So there seems no alternative to peppering T with “typically”; even the best description of the interaction of psychological states must make allowances for all sorts of unforeseeable aberrations with non-psychological sources. The surgical removal of the brain would be the cause of one such aberration in animals and bodies, even though it does not have the same effect upon another physical object (i.e., the thing with psychological persistence conditions that happens to coincide with them until the brain is removed).

Furthermore, it is far from obvious that the psychological theory T would favor the potential realizers in the person, rather than those in the animal or body — especially if the psychological theory T is a scientifically respectable successor to *commonsense* psychology. If there is a relatively precise body of theory worthy of the name “folk psychology”, I should expect it to say that, were I to undergo a brain zap — i.e., were my psychological states wiped out, and my brain “set back” to an infantile level — then *I* would return to an infantile state. Who, besides a minority of philosophers, would believe that such an event would bring a new person into existence? Even if the psychological theory used to generate functionalism were radically more precise than anything commonsense or “folk psychology” has to offer, I should be surprised to learn that the discipline of *psychology* would legislate on this matter, telling us that, yes, a brain zap definitely kills us and brings into existence a new person. If the psychological

theory T says that I would return to an infantile state after a brain zap, then the thick properties Q1, Q2,... and R1, R2,... resulting from conjoining thin micro-realizers with animal and body sortals are *better* satisfiers of T than the thick properties Shoemaker says realize mentality in persons — at least, they do better with respect to these particular diachronically-loaded causal powers, the CPs specifying what happens to a person who undergoes a brain zap. Shoemaker could say that the psychologists developing T should not legislate on philosophically controversial matters such as this. But then should they really be allowed to legislate on whether I could survive a brain transplant? After all, that is a matter of philosophical controversy, as well.

One might have thought that it is a verifiable neurobiological fact that any thinker “associated with” my brain — either causally dependent upon it or perhaps even identical to it — would go where my living brain goes. So, any psychological theory worth its salt should say that, if my brain continued to function while separated from the rest of my body, whatever thinking things formerly depended upon that brain would continue to do so. No such thinker could, then, be an animal or body, given their persistence conditions; and so animal and body do not think. This is a plausible-sounding argument for the conclusion that the “diachronic unity relation” for any thinking thing with a brain like mine must be something like brain-based psychological continuity; and that any thinking thing that depends upon my brain for its ability to think will continue to exist so long as that brain continues to function, with neurological states subserving mentality in the usual way, whether or not the original animal or body attached to the brain has survived. But functionalism, in its “topic-neutrality”, works against this line of argument.

According to functionalism, whatever physical conditions may be necessary and sufficient for human person-stages to stand in the relation of diachronic unity, these physical conditions are person-preserving because they play the role, in human beings, of a Ramsifiable relation within the psychological theory, T. As Shoemaker himself points out, this includes the diachronic unity relation for the satisfiers of T:

[If the Ramsey-Lewis method for defining theoretical terms] works for terms standing for kinds of mental states, it will also work for terms – e.g., “synchronically unified with” and “diachronically unified with” – that stand for relations between mental states. These can be included in the “package” we define by use of the Ramsey-Lewis method. Folk psychological theory says that when certain beliefs and desires are synchronically unified, they give rise to later beliefs that are diachronically unified with them. In forming the Ramsey sentence of this theory we can replace the terms for these relations, along with the terms for the mental states, with variables; and we can then use this, in the way David Lewis described, to define both the states and the relations.¹⁰⁹

Any relation between stages of thinking things that plays the right functional role with respect to the mental states of those things will be the diachronic unity relation — *for them*. The diachronic unity relations for animals and bodies, although slightly different from those appropriate to Shoemaker’s persons, ought still to play the role *in their lives* that corresponds to diachronic unity within a theory like T. The animal and

¹⁰⁹ Shoemaker, “Brown-Brownson Revisited”, p. 584.

body are bound to have thick properties that play the role described by T relative to stimuli impinging on their sense organs, their own thick neurological states, and overt behavior. The property Q27 that, in the animal, plays the functional role of pain, confers strongly identity-loaded CPs, just like its counterpart P27 in persons; but the CPs conferred upon the animal will be internally related to the persistence conditions of animals, and their slightly different diachronic unity relation. And similarly for R27, its CPs, and the body's diachronic unity relation.

The argument of this section can be pressed by imagining organisms that could not possibly lose their “brains” without the complete shut-down of biological function (a possibility Shoemaker seems to take seriously).¹¹⁰ Try to imagine intelligent creatures with a nervous system so diffuse that the animal and person could not, as a matter of nomological necessity, come apart. Suppose elimination of the structure needed to support a psychology would result in destruction of life-sustaining organs, and structures underlying mental function could not be preserved without preserving the creature's biological life. Suppose that these creatures come into existence with at least some rudimentary psychology, and that they cease to be when they can no longer sustain any kind of psychological life. By Shoemaker's lights, nomological necessity is not to be distinguished from absolute necessity; so, for such creatures, there would be no way for biological persistence conditions to be satisfied in the absence of psychological persistence conditions, and vice versa. Is there just one thing coincident with the aggregate of matter and the body then constituting such a creature? If there were two, they could not be thought to differ in their thick properties, nor in any other way.

¹¹⁰ SBC, pp. 304-6.

Whether one or two in each case, such creatures have mental states despite the fact that they satisfy biological persistence conditions — that is, they are unable, as a matter of necessity, to survive biological death, and they survive as long as a single biological life continues. In this they are unlike Shoemaker’s persons; but exactly like his coincident human animals. If the mere inability to survive biological death, the necessity of continued biological functioning, does not count against these creatures’ satisfaction of T, why should it count against the satisfaction of T by the animal coincident with me? If it is possible for things that are essentially biological to have mental lives, why is it not possible for the essentially biological human animal who accompanies me for my entire life to have a mental life? After all, he exemplifies physical states that certainly *seem* to satisfy any plausible Ramsified psychological theory T that *my* brain states might satisfy.

Until Shoemaker has answered these questions, he cannot claim to have lain to rest the “Too Many Minds” objection to his metaphysics of coincident objects.¹¹¹

¹¹¹ The fact that one can include personal diachronic unity within the psychological theory T to be ramsified provides an answer to an argument against reductionism that appears in PR. There, Shoemaker makes two claims: One is that, since the persistence conditions of persons “enter constitutively into the nature of [psychological] properties”, these properties are not realized by thin properties, or by the thick properties of coincident physical objects other than the person. So much clearly follows from his assumptions about properties and coincident objects. He adds that, although the psychological properties are realized by thick physical properties of persons, “they are properties whose specification is ineluctably psychological in nature” (PR, p. 94). If these properties, and the unity relation that enters into their CPs, can be functionally specified, as Shoemaker also believes, then it is far from clear that they remain “ineluctably psychological” — unless Shoemaker’s version of functionalism makes every psychological state “ineluctably psychological”.

VII. Conclusion

Nothing I have said here could be the last word on any aspect of Sydney Shoemaker's metaphysics of properties, minds, and bodies. Given the complexity of his system, and the profundity of the problems it is used to solve, I am sure I will have sometimes misunderstood his intentions, voicing criticisms that rest upon a misinterpretation. And, given Shoemaker's ingenuity, many of my objections to his combination of views will doubtless turn out merely to be opportunities to further refine his system. I find many aspects of his metaphysical vision extremely attractive, and I shall be satisfied if this examination of his metaphysics serves merely as an impetus to clarify its structure and make its foundations more secure.¹¹²

¹¹² Thanks are due to John Hawthorne, Ted Sider, Tamar Gendler, and other participants in a seminar at Syracuse University. I am grateful to Ernie Sosa for keeping the door open at *Philosophy and Phenomenological Research* after many missed deadlines; and to Jason Turner for many suggestions that improved the final version. My deepest debt is to Sydney Shoemaker for correspondence and numerous conversations (at the Chisholm Memorial Conference, during his visit to the Syracuse seminar, and upon several other occasions); and also for his great patience. (This paper was to appear as a reply to RMRC in 2002; I regret to say that my inability to finish it held up publication of Shoemaker's paper for several months.)

Abbreviated References to Shoemaker's Papers

C&P: "Causality and Properties" in Peter van Inwagen (ed.), *Time and Cause: Essays Presented to Richard Taylor* (Reidel: Dordrecht, 1980). Reprinted in *Identity, Cause, and Mind* (Cambridge: Cambridge University Press, 1984), pp. 206-233. (Page numbers in citations refer to the latter).

CMN: "Causality and Metaphysical Necessity", *Pacific Philosophical Quarterly* 79 (1998), pp. 59-77.

IPC: "Identity, Properties, and Causality", *Midwest Studies in Philosophy* 4 (1979), pp. 321-342. Reprinted in *Identity, Cause, and Mind* (Cambridge: Cambridge University Press, 1984), pp. 234-60. (Page numbers in citations refer to the latter.)

PR: *Physical Realization* (Oxford: Oxford University Press, 2007).

RMC: "Realization and Mental Causation", in Carl Gillett and Ernest LePore (eds.), *Physicalism and its Discontents* (Cambridge: Cambridge University Press, 2001), pp. 74-98.

RMRC: "Realization, Micro-Realization, and Coincidence", *Philosophy and Phenomenological Research* 67 (2003), pp. 1-23.

SBC: “Self, Body, and Coincidence,” *Proceedings of the Aristotelian Society*,
Supplementary Vol. 73 (1999), pp. 287-306.