IDENTITY, ESSENCE, AND INDISCERNIBILITY*

CAN things be identical as a matter of fact without being necessarily identical? Until recently it seemed they could, but now "the dark doctrine of a relation of 'contingent identity'"¹ has fallen into disrepute. In fact, the doctrine is worse than disreputable. By most current reckonings, it is refutable. That is, philosophers have discovered that things can never be contingently identical. Appearances to the contrary, once thought plentiful and decisive, are blamed on the befuddling influence of a powerful alliance of philosophical errors. How has this come about? Most of the credit goes to a simple argument (original with Ruth Marcus, but revived by Saul Kripke) purporting to show that things can never be only contingently identical. Suppose that α and β are identical. Then they share all their properties. Since one of β's properties is that necessarily it is identical with β, this must be one of α's properties too. So necessarily α is identical with β, and it follows that α and β cannot have been only contingently identical.²

* Donald Davidson, Sally Haslanger, Kit Fine, David Kaplan, Noa Latham, Shaugan Lavine, Barry Loewer, George Myro, Sydney Shoemaker, Robert Stalnaker, and David Velleman all made comments that helped me with the writing of this paper.

² In the prevailing necessitarian euphoria, it has become difficult to recapture the atmosphere of a few years back, when contingent identity was a commonplace of logical and metaphysical theorizing. To cite just two examples, Dana Scott's "Advice on Modal Logic" [in Karel Lambert, ed., Philosophical Problems in Logic (Boston: D. Reidel, 1970)] urged that "two individuals that are generally distinct might share all the same properties (of a certain kind!) with respect to the present world . . . Hence they are equivalent or incident at the moment. Relative to other points of reference they may cease to be incident" (165). And most of the early mind/body-identity theorists—U. T. Place, J. J. C. Smart, Thomas Nagel, among others—took themselves to be asserting the contingent identity of mental and physical entities. Smart, for instance, says very explicitly that "on the brain-process thesis the identity between the brain process and the experience is a contingent one" ["Sensations and
I. A PARADOX OF ESSENTIALISM

Despite the argument's simplicity and apparent cogency, somehow, as Kripke observes, "its conclusion . . . has often been regarded as highly paradoxical." 3 No doubt there are a number of bad reasons for this (Kripke himself has exposed several), but there is also a good one: essentialism without some form of contingent identity is an untenable doctrine, because essentialism has a shortcoming that only some form of contingent identity can rectify. The purpose of this paper is to explain, first, why contingent identity is required by essentialism and, second, how contingent identity is permitted by essentialism.

Essentialism's problem is simple. Identicals are indiscernible, and so discernibles are distinct. Thus, if \( \alpha \) has a property necessarily which \( \beta \) has only accidentally, then \( \alpha \) is distinct from \( \beta \). In the usual example, there is a bust of Aristotle, and it is formed of a certain hunk of wax. (Assume for the sake of argument that the hunk of wax composes the bust throughout their common duration, so that temporal differences are not in question.) If the bust of Aristotle is

---

3 Kripke, "Identity and Necessity," in Stephen P. Schwartz, ed., Naming, Necessity, and Natural Kinds (Ithaca, N.Y.: Cornell, 1977), p. 67. Let me say at the outset that, as far as I can see, Kripke's argument does succeed in establishing what it claims to establish, namely that identity, in the strict sense, can never obtain contingently. If the conclusion seems paradoxical, as it surely does, that is because people are confusing it with the genuinely paradoxical thesis that there can be no relation with the characteristics traditionally associated with "contingent identity." Speaking more generally, what Kripke says about identity is important and correct, and not questioned here; but people may have thought that his conclusions closed off certain avenues of investigation which are in fact still open. And that is perhaps why some of those conclusions have seemed hard to accept.
necessarily a bust of Aristotle and if the hunk of wax is only accidentally a bust of Aristotle, then the bust and the hunk of wax are not the same thing. Or suppose that Jones drives home at high speed. Assuming that her speeding home is something essentially done at high speed, whereas her driving home only happens to be done at high speed, her speeding home and her driving home are distinct.

So far, so good, maybe; but it would be incredible to call the bust and the wax, or the driving home and the speeding home, distinct, and leave the matter there. In the first place, that would be to leave relations between the bust and the hunk of wax on a par with either's relations to the common run of other things, for example, the Treaty of Versailles. Secondly, so far it seems an extraordinarily baffling metaphysical coincidence that bust and wax, though entirely distinct, nevertheless manage to be exactly alike in almost every ordinary respect: size, weight, color, shape, location, smell, taste, and so on indefinitely. If distinct statues (say) were as similar as this, we would be shocked and amazed, not to say incredulous. How is such a coincidence possible? And, thirdly, if the bust and the wax are distinct (pure and simple), how is it that the number of middle-sized objects on the marble base is not (purely and simply) 2 (or more)? Ultimately, though, none of these arguments is really needed: that the bust and the wax are in some sense the same thing is perfectly obvious.

Thus, if essentialism is to be at all plausible, nonidentity had better be compatible with intimate identity-like connections. But these connections threaten to be inexplicable on essentialist principles, and essentialists have so far done nothing to address the threat.\(^4\) Not
quite nothing, actually; for essentialists have tried to understand certain (special) of these connections in a number of (special) ways. Thus, it has been proposed that the hunk of wax composes the bust; that the driving home generates the speeding home; that a neural event subserves the corresponding pain; that a computer's structural state instantiates its computational state; that humankind comprises personkind; and that a society is nothing over and above its members. Now all these are important relations, and each is importantly different from the others. But it is impossible to ignore the fact that they seem to reflect something quite general, something not adequately illuminated by the enumeration of its special cases, namely, the phenomenon of things' being distinct by nature but the same in the circumstances. And what is that if not the—arguably impossible—phenomenon of things' being contingently identical but not necessarily so? The point is that, if essentialism is true, then many things that are obviously in some sense the same will emerge as strictly distinct; so essentialism must at least provide for the possibility of intimate identity-like connections between distinct things; and such connections seem to be ways of being contingently identical. Essentialism, if it is to be plausible, has to be tempered by some variety of contingent identity.

Hence, essentialism is confronted with a kind of paradox: to be believable it needs contingent identity; yet its principles appear to entail that contingent identity is not possible. To resolve the paradox, we have to ask: What is the "nature" of a particular thing?

II. ESSENCE

Begin with a particular thing α. How should α be characterized? That is, what style of characterization would best bring out "what α is"? Presumably a characterization of any sort will be via certain of α's properties. But which ones?

Why not begin with the set of all α's properties whatsoever, or what may be called the complete profile of α? Since α's properties include, among others, that of being identical with α, there can be no question about the sufficiency of characterization by complete profile. But there may be doubt about its philosophical interest. For the properties of α will generally be of two kinds: those which α had to have and those which it merely happens to have. And, intuitively, the properties α merely happens to have reveal nothing of what α is, as contrasted with what it happens to be like. As Antoine Arnauld explains in a letter to Leibniz,

... it seems to me that I must consider as contained in the individual concept of myself only that which is such that I should no longer be me if
it were not in me: and that all that is to the contrary such that it could be
or not be in me without my ceasing to be me, cannot be considered as
being contained in my individual concept.5

(Adding: "That is my idea, which I think conforms to everything
which has ever been believed by all the philosophers in the world")!
If α’s nonnecessary properties reveal nothing about what α is, noth-
ing will be lost if they are struck from its characterization.

Dropping α’s nonnecessary properties from its complete profile
yields the set of all properties that α possesses essentially, or what can
be called the complete essence of α.6 Since α is essentially identical
with α, the property of so being will be included in α’s complete
essence; so the sufficiency of the characterization is again beyond
doubt. Nor can there be much question that complete essences do
better than complete profiles at showing what particulars are by
nature. But worries about philosophical interest remain.

In the first place, the essence of an entity ought, one feels, to be an
assortment of properties in virtue of which it is the entity in ques-
tion. But this requirement is trivialized by the inclusion, in essences,
of identity properties, like that of being identical with California. A
thing does not get to be identical with California by having the
property of so being, but gets to be California and to have that
property, alike, by having certain other properties. And it is these
other properties that really belong in a thing’s characterization. An-
other way of putting what is probably the same point is that identity
properties and their ilk are not “ground floor,” but dependent or
supervenient. As a kind of joke, someone I know explains the differ-
ence between his two twin collies like this: “It’s simple: this one’s
Lassie, and that one’s Scottie.” What makes this a joke is that that
cannot be all there is to it; and the reason is that identity properties
are possessed not simpliciter, but dependently on other properties.
It is only these latter properties that ought, really, to be employed in
a thing’s characterization.

Secondly, the essence of a thing is supposed to be a measure of
what is required for it to be that thing. But, intuitively, requirements
can be more or less. If the requirements for being β are stricter than
the requirements for being α, then β ought to have a “bigger” es-

cence than α. To be the Shroud of Turin, for instance, a thing has to

5 H. T. Mason, ed., The Leibniz-Arnauld Correspondence (Manchester: Univer-
6 In some contexts it is useful to distinguish between essential and necessary and
between accidental and contingent properties. For example, someone might think
that, whereas Socrates is essentially human, he is only necessarily Greek-or-not. The
distinction is intuitive but irrelevant to our purposes.
have everything it takes to be the associated piece of cloth, and it has to have enshrined Jesus Christ (this is assuming that the Cloth of Turin did, in fact, enshroud Jesus Christ). Thus, more is essential to the Shroud of Turin than to the piece of cloth, and the Shroud of Turin ought accordingly to have the bigger essence. So, if essences are to set out the requirements for being their possessors, it should be possible for one thing’s essence to include another’s. What is perhaps surprising, however, is that this natural perspective on things will not survive the introduction of identity properties and their ilk into individual essences. Think of the piece of cloth that makes up the Shroud of Turin (call it “the Cloth of Turin”): if the property of being identical with the Cloth of Turin is in the Cloth of Turin’s essence, then, since that property is certainly not in the Shroud of Turin’s essence, the inclusion is lost. Equivalently, it ought to be possible to start with the essence of the Cloth of Turin, add the property of having served as the burial shroud of Jesus Christ (along perhaps with others this entails), and wind up with the essence of the Shroud of Turin. But, if the property of being identical to the Cloth of Turin is allowed into the Cloth of Turin’s essence, then adding the property of having served as Jesus’s burial shroud produces a sort of contradiction; for, obviously, nothing is both identical to the Cloth of Turin and necessarily possessed of a property—having served as Jesus’s burial shroud—which the Cloth of Turin possesses only contingently. And the argument is perfectly general: if identity proper-

7 Where kinds of things are concerned, this is comparatively uncontroversial: the essence attaching to the kind cow strictly includes the essence attaching to the kind animal. But, as Leibniz noticed, individuals can be thought of as instancing smallest or least kinds, what we might call individual kinds (what sets individual kinds apart is that in each possible world at most one thing instances them): “...since St. Thomas could maintain that every separate intelligence differed in kind from every other, what evil will there be in saying the same of every person and in conceiving individuals as final species” [G. R. Montgomery, ed., Discourse on Metaphysics, Correspondence with Arnauld, Monadology (La Salle, Ill.: Open Court, 1908), p. 257]. Now just as the essences of general kinds can be comparable, so can the essences of an individual and a general kind (Bossie’s essence includes that of cow). But then why should the essences of individual kinds not be comparable too? There is every reason to see the relation between the Shroud of Turin and the piece of cloth as continuous with that between cow and animal: just as it is harder to be a cow than an animal, it is harder to be the Shroud of Turin than the piece of cloth, and just as nothing can be a cow without being an animal (but not conversely), nothing can be the Shroud of Turin without being the piece of cloth (but not conversely). So there seems to be a strong case for extending the familiar doctrine that the essence of one kind can include that of another to individual kinds, and, what comes to the same, to individuals themselves. (Incidentally, I am assuming that the Shroud of Turin could not have been made of anything other than that piece of cloth. Something made of another piece of cloth might have been called “the Shroud of Turin,” but it would not have been our Shroud of Turin.)
ties (or others like them) are allowed into things’ essences, then distinct things’ essences will always be incomparable. 8

Implicit in the foregoing is a distinction between two types of property. On the one hand, there are properties that can only “build up” the essences in which they figure. Since to include such properties in an essence is not (except trivially) to keep any other property out, they will be called cumulative. On the other hand, there are properties that exercise an inhibiting effect on the essences to which they belong. To include this sort of property in an essence is always to block the entry of certain of its colleagues. Properties like these—identity properties, kind properties, and others—are restrictive. If restrictive properties are barred from essences, that will ensure that essences are comparable, and so preserve the intuition that each essence specifies what it takes to be the thing that has it.

Essences constrained to include only cumulative properties will have two advantages. First, they will determine their possessors’ inessential properties negatively, not by what they include but by what they leave out; and, as a result, things’ essences will be amenable to expansion into the larger essences of things it is “more difficult to be,” thus preserving the intuition that a thing’s essence specifies what it takes to be that thing. And, second, things will be the things they are in virtue of having the essences they have. To put it approximately but vividly, they will be what they are because of what they are like (see Prop. 4). 9 Our tactic will be to look first for properties suited

8 Identity properties are by no means the only properties that lead to these difficulties. Kind properties, for example, are just as bad. If the property of being a piece of cloth (i.e., being of the kind piece of cloth) is included in the Cloth of Turin’s essence, then adding on the property of having served as Jesus’s burial shroud (along with perhaps some others) can no longer yield the essence of the Shroud of Turin. For it is never essential to any piece of cloth that it should have been used in any particular way (necessarily, any piece of cloth could have been destroyed moments after its fabrication). Incidentally, kind properties are disqualified by the first argument too: like identity properties, they are possessed not simpliciter, but dependently on other properties. It defies credulity that two things should be indiscernible up to this detail, that one is a collie and the other is not. (Thinking of identity and kind properties as classificatory, rather than characterizing, the above becomes the truism that a thing’s classification depends entirely on what the thing is like.)

9 Although this is probably overstating it, at least as far as what is actually established goes (see Prop. 4 below). See also David Wiggins, Sameness and Substance (Cambridge, Mass.: Harvard, 1980), and Robert Merrihew Adams, “Primitive Thisness and Primitive Identity,” this JOURNAL, LXXVI, 1 (January 1979): 5–26, in both of which the sufficiency of “quality” for “quiddity” is considered and rejected. Wiggins’s opinion is that

... to make clear which thing a thing is, it is not enough (pace the friends of the logically particularized essence) to say however lengthily that it is such, or so and so. We have to say that it is this or that such. This is perfectly obvious when
to inclusion in cumulative essences and then to show that, under reasonable further assumptions, identity supervenes on cumulative essence.

III. MODELING ESSENCE
To find a set of properties suitable for the construction of cumulative essences, one needs to know what "properties" are; especially because a totally unrestricted notion of property is incoherent, as Richard's and Grelling's paradoxes show.\(^\text{10}\) So it makes sense to look for a sharper formulation of the notion of property before pushing ahead with the search for cumulative essence. Such a formulation is provided by the apparatus of possible worlds.

Let \(L\) be an ordinary first-order language with identity, and let \(L(\Box)\) be \(L\) supplemented with the sentential necessity operator '\(\Box\)'. To a first approximation, a model of \(L(\Box)\) is just a set \(W\) of models \(W\) of \(L\) (to be thought of as possible worlds). But there is a qualification. Traditionally, a model's domain is simultaneously the set of things that can be talked about and the set of things that exist, i.e., the domain of discourse and the ontological domain. But, since one can talk about things that do not exist, \(W\)'s domain of discourse should be allowed to contain things not in its ontological domain; and since there are not, mystical considerations to the side, things about which one cannot talk, \(W\)'s ontological domain should be a subset of its domain of discourse. What this means formally is that with each model \(W\) in \(\mathcal{W}\) is associated a subset \(D(W)\) of its domain (intuitively, the set of things existing in \(W\)). Let \(W\) thus supplemented be known as a free model of \(L\). For simplicity's sake, every member of \(\mathcal{W}\) will have the same domain \(D\), and \(\mathcal{D}\) will be the union of the \(D(W)\)'s. And now a model of \(L(\Box)\) can be defined as a set \(\mathcal{W}\) of free models of \(L\), such that the domain of discourse of each is the union of all their ontological domains.\(^\text{11}\)

\(^\text{10}\) See Peter Geach, "Identity," in his Logic Matters (Oxford: Blackwell, 1972). Baruch Brody asserts that his theory, according to which items are identical if and only if they are indiscernible over "all" properties, "is not ruled out by its leading to any paradoxes" [Identity and Essence (Princeton, N.J.: University Press, 1980), p. 18]. But he does not satisfactorily explain why not.

\(^\text{11}\) The accessibility relation is omitted; in effect, every world has access to every other.
Tempting though it is to define a property as any function $P$ from worlds $W$ to subsets $P(W)$ of $D$, there is reason not to. For when will $\alpha$ have $P$ necessarily; when it has $P$ in every world, or when it has it in every world in which it exists? Not the former, because then everything necessarily exists. Nor the latter, first, because it permits a thing to possess only accidentally a property it must perish to lose and, second, because it upsets the principle that essence varies inversely with existence, i.e., the fewer the worlds a thing exists in, the more properties it has essentially. What this in fact points up is a difference between two kinds of characteristic: being human in every world where you exist is sufficient for being human everywhere (almost all characteristics are like this), but existing in every world where you exist is obviously not sufficient for existing everywhere (apparently only existence and characteristics involving existence are like this). From now on, an attribute is a function from worlds $W$ to subsets of $D$, and a property is an attribute $P$ such that anything having it wherever it exists has it everywhere. In general, an attribute is necessary to a thing if it attaches to the thing in every possible world (preserving the intuition that existence is sometimes contingent). If the attribute is also a property, this reduces to the thing’s having the attribute wherever it exists (preserving the intuition that humanity is necessary to Socrates if he cannot exist without it). In what follows, properties (rather than attributes in general) are the items under investigation.

From the definition of property, it follows that, if $P$ is a property, then so are $P^{\square}: W \rightarrow \{\alpha \in D | \forall W' \exists P(W')\}$ (the property of being essentially $P$, or $P$’s essentialization); $P^{\Diamond}: W \rightarrow \{\alpha \in D | \exists W' \exists P(W')\}$ (the property of being possibly $P$, or $P$’s possibilization); and $P^{\triangle}: W \rightarrow \{\alpha \in P(W) | \exists W' \alpha P(W')\}$ (the property of being accidentally $P$, henceforth $P$’s accidentalization). The essentialization $X^{\square}$ (accidentalization $X^{\triangle}$) of a set $X$ of properties is the set of its members’ essentializations (accidentalizations). If $\alpha$ is in $P(W)$ and exists in $W$, then it is in $P[W]$ (note the square brackets). If for each $P$ in $X \alpha P(W)$, then $\alpha X(W)$; if, in addition, $\alpha$ exists in $W$, then it is in

12 The problem existence raises for the definition of ‘essential’ is not unfamiliar. Kripke alludes to it in “Identity and Necessity”:

Here is a lectern. A question which has often been raised in philosophy is: What are its essential properties? What properties . . . are such that this object has to have them if it exists at all . . . [Footnote:] This definition is the usual formulation of the notion of essential property, but an exception must be made for existence itself: on the definition given, existence would be trivially essential. We should regard existence as essential to an object only if the object necessarily exists. (86)
$X[W]$. A set $Y$ of properties is *satisfiable* in $W$, written $\text{Sat}[Y,W]$, iff there is something in $\cap_{P[Y]} P[W]$. Given a set $X$ of properties, a thing $\alpha$'s *X-essence* $E_X(\alpha)$ is the set of all $P$ in $X$ which $\alpha$ possesses essentially, or \{\text{PeX}\exists W(\alpha e P^=\langle W\rangle)\}. $\beta$ is an *X-refinement* of $\alpha$, written $\alpha \leq \beta(X)$—or just $\alpha \leq \beta$ if $X$ is clear from context—iff $\alpha$'s X-essence is a subset of $\beta$'s, i.e., if $E_X(\alpha) \subseteq E_X(\beta)$.

That essences drawn from $X$ should be amenable to expansion is a condition not on $X$ alone, but on $X$ and $\mathcal{W}$ taken together: $X$ and $\mathcal{W}$ must be so related that suitably expanding the X-essence of any thing in any world in $\mathcal{W}$ always produces the X-essence of some other thing existing in that same world. Let $\Omega = \langle \mathcal{W},X \rangle$ be a *property-model* of $\mathcal{L}(\forall)$ if $\mathcal{W}$ is a model of $\mathcal{L}(\forall)$ and $X$ is a set of properties on $\mathcal{W}$. A property-model $\Omega$ is *upward-closed*, or *u-closed*, iff:

\[(U) \forall \alpha \forall Y \leq X - E_X(\alpha) \forall W [\alpha e Y^=\langle W\rangle] \implies (\exists \beta \geq \alpha) \beta e Y^=\langle W\rangle]\]

In words, given any $\alpha$, given any set $Y$ of properties not essential to $\alpha$, and given any world $W$, if $\alpha$ exists in $W$ and has $Y$ there, then it has a refinement $\beta$ which exists in $W$ and has $Y$ essentially there. (For future reference, (U) is provably equivalent to the simpler statement that $\forall Z \subseteq X \forall W [\text{Sat}[Z,W] \implies \text{Sat}[Z^=\langle W\rangle]]$.)

Upward closure requires that any existing $\alpha$ possessing (suitable) properties inessentially be refinable into an existing $\beta$ that possesses those properties essentially. The converse is intuitive too: if there exists a $\beta$ refining $\alpha$ which essentially possesses (suitable) properties not essential to $\alpha$, then $\alpha$ should exist and possess those same properties accidentally. Thus, if the Shroud of Turin exists in a world $W$, then not only should the Cloth of Turin exist in $W$, but it should serve as Jesus's burial shroud in $W$. Not only is this plausible on the face of it, but otherwise it is hard to see what separates the worlds in which the Cloth occurs by itself from those in which it occurs together with the Shroud; whereas surely the difference is that in the latter, but not the former, the Cloth serves as Jesus's burial shroud. And, in general, if $\beta$ refines $\alpha$, then surely what separates worlds in which $\alpha$ exists without $\beta$ from those in which $\alpha$ exists with $\beta$ is that, in the latter worlds, $\alpha$ possesses the difference between their X-essences, whereas in the former it does not. Specifically, if $\beta$ refines $\alpha$, then (1) $\alpha$ exists wherever $\beta$ does, (2) in worlds where both exist, $\alpha$ accidentally possesses every property in $E_X(\beta) - E_X(\alpha)$, i.e., every property in the difference between their essences, and (3) in worlds where just $\beta$ exists, $\alpha$ does not possess all the properties in $E_X(\beta) - E_X(\alpha)$. All of these follow on the addition of a requirement of *downward closure*, literally the converse of the upward closure enforced above:
(D) \( \forall \alpha \forall Y \subseteq X - \mathcal{E}_X(\alpha) \forall \mathcal{W} [(\exists \beta \geq \alpha)\beta \epsilon Y^\circ\mathcal{W} \Rightarrow \alpha \epsilon Y^\circ\mathcal{W}] \)

In words, for any property \( \alpha \), any properties \( Y \) not essential to it, and any world, if \( \alpha \) has an existing refinement \( \beta \) possessing \( Y \) essentially, then \( \alpha \) exists and possesses \( Y \) accidentally. Property-models satisfying both (U) and (D) are closed.

**Prop. 1** Let \( \Omega \) be closed. If \( \alpha \leq \beta \), then

1. \( \mathcal{W}(\beta) \subseteq \mathcal{W}(\alpha) \)
2. \( \forall \mathcal{W} \mathcal{W}(\beta) [\alpha \epsilon (\mathcal{E}(\beta) - \mathcal{E}(\alpha))^\Delta(\mathcal{W})] \)
3. \( \forall \mathcal{W} \mathcal{W}(\alpha) - \mathcal{W}(\beta) [\alpha \not\epsilon (\mathcal{E}(\beta) - \mathcal{E}(\alpha))^\Delta(\mathcal{W})] \)

**Proof:** For (1), observe first that \( \Delta[\mathcal{W}] = \Delta(\mathcal{W}) \cap \mathcal{D}(\mathcal{W}) = \mathcal{D} \cap \mathcal{D}(\mathcal{W}) = \mathcal{D}(\mathcal{W}) \) (because the null intersection is everything, in this case \( \mathcal{D} \)). By (D), \( \beta \epsilon \mathcal{D}(\mathcal{W}) \Rightarrow \beta \epsilon \Delta[\mathcal{W}] \Rightarrow \beta \epsilon \Delta^\circ[\mathcal{W}] \Rightarrow \alpha \epsilon \Delta^\circ[\mathcal{W}] \Rightarrow \alpha \epsilon \Delta[\mathcal{W}] \Rightarrow \alpha \epsilon \mathcal{D}(\mathcal{W}). \)

For (2), just let \( \mathcal{Z} = \mathcal{E}(\beta) - \mathcal{E}(\alpha) \). For (3), suppose that \( \beta \) does not exist in \( \mathcal{W} \), and suppose *per absurdum* that \( \alpha \) accidentally possesses, in \( \mathcal{W} \), the difference between its X-essence and \( \beta \)'s. By upward closure, \( \alpha \) has a refinement \( \gamma \) which exists in \( \mathcal{W} \) and which possesses the whole lot, i.e., all of \( \mathcal{E}(\beta) \), essentially. But then \( \gamma \) refines \( \beta \); so, by (1), \( \beta \) exists in \( \mathcal{W} \) after all. Contradiction. \( \square \)

**IV. CONTINGENT IDENTITY**

Things that disagree in any of their properties are not identical. The Shroud of Turin, which (let us suppose) had to enshroud Jesus, is thus distinct from the Cloth of Turin, which did not. But, as we said, there is something deeply troubling about leaving matters thus. After all, the Shroud of Turin is also distinct from the Treaty of Versailles. Do we really want to leave the Shroud's relations with the Cloth on the same level as its relations with the Treaty of Versailles? And the trouble does not stop here. The Cloth and the Shroud differ, it is true, but it must also be said that their differences are of a somewhat recherché variety. In every ordinary respect the two are exactly alike. And this is on the face of it a rather extraordinary coincidence. That the Cloth and the Shroud are specially connected seems undeniable, but something must be done to demystify the connection. If it is not identity, what is it?

Maybe the answer is that it *is* identity, but identity of a different, less demanding, character. In the terms of a currently unpopular theory—and notwithstanding the argument that seems to rule it out—it is "contingent identity," or (the more neutral term) "coincidence."\(^{13}\) Despite the once widespread enthusiasm for contingent

\(^{13}\) Another reason for preferring "coincident" to "contingently identical" is that properly identical things will also be coincident, indeed necessarily so, and it sounds funny to say that they are *necessarily* contingently identical. But I continue to use the term, partly for shock value, and partly for reasons to be given presently.
identity, it seems to me that the idea never received a satisfactory formulation. Specifically, all the analyses I have seen have a drawback in common: they (sometimes explicitly, sometimes in effect) treat things as strung together out of their modal manifestations (states, slices, stages), and call them coincident in a world if their manifestations in that world are properly identical. There are two objections to this kind of explication. The first is that it relies, ultimately, on the notion to be explicated; for one has little idea what a thing’s state or manifestation in a world is, if not something whose nature is exhausted by its being exactly like the thing so far as the relevant world is concerned, i.e., by its being contingently identical with the thing in that world. Even more important, intuitively, things (e.g., animals) are not strung together out of their modal manifestations in this way, and proper identity of modal manifestations is not what is meant by contingent identity. Intuitively, things are just, well, things, and coincidence is a matter of things’ circumstantial sameness.

How, then, is circumstantial sameness to be separated out from total sameness? What marks off the “ordinary” respects in which the Cloth and the Shroud are alike from the “extraordinary” respects in which they differ? Let us start with Dana Scott’s idea that “two individuals that are generally distinct might share all the same properties (of a certain kind!) with respect to the present world.” (“Advice on Modal Logic,” op. cit., p. 165). Probably the most obvious way of elucidating this would be to say the following: \( \alpha \) and \( \beta \) are contingently identical (in a world) if and only if they have the same contingent properties (in that world). So, for example, the bust and the hunk of wax agree in their size, weight, color, and so on—and all these are, of course, properties they have contingently. Maybe contingent identity is sameness of contingent properties.

That that cannot be right follows from the fact that, if anything has a property contingently, then it has all its stronger properties contingently too. (Suppose \( \alpha \) has \( P \) contingently; then there is a world in which \( \alpha \) lacks \( P \); but if \( Q \) is stronger than \( P \), \( \alpha \) also lacks \( Q \) there; and, since \( \alpha \) has \( Q \), it has it contingently.) So, for example, if Paris is only contingently romantic, then it is only contingently identical-to-Paris-and-romantic. But that means that anything that has the same contingent properties that Paris has is (among other things) identical with Paris. And that already shows that Paris is the only thing with exactly its contingent properties. Thus, if contingent identity is treated as sameness of contingent properties, contingent identity collapses into identity proper.
Still, from a certain perspective, this first analysis might be only a little way off the mark. To the question, What makes a thing’s possession of a property circumstantial? it seems natural to reply that the possession is circumstantial if it depends on how matters actually stand with the thing. But now notice that this is ambiguous. Depends how: partly or wholly? If you answer “partly,” then you get the thing’s contingent properties. But, if you answer “wholly,” you get the properties the thing has entirely in virtue of how matters actually stand with it; and these properties, what can be called the categorical properties, seem intuitively to be the ones in question. For if two things agree in all their categorical properties (in a world), then so far as that world and it alone is concerned, the two things are just the same. And that is what was meant by “contingent identity.” So contingent identity is categorical indiscernibility.

To come to this conclusion from a different direction, consider again the driving home and the speeding home. What separates the “ordinary” respects in which these two are alike from the “extraordinary” respects in which they differ? For a start, the driving home could have been done slowly, but not so the speeding home; the driving home had higher prior probability than the speeding home; if the driving home had not occurred, Jones would have taken the bus home, but the same cannot be said of the speeding home; and the speeding home, rather than the driving home as such, caused Jones’s accident. Thus, the driving home and the speeding home differ in—among other things—their modal, probabilistic, counterfactual, and causal properties. Now what is special about modal, probabilistic, counterfactual, and causal properties? Primarily this: they are grounded not just in how a thing actually is, but on how it would or could have been if circumstances had been different. All a thing’s other properties, by contrast, are grounded entirely in how it is in the circumstances that happen to obtain. The former properties are a thing’s hypothetical properties, the latter its categorical properties.

Now the contingent identity of the driving home with the speeding home seems intuitively to be a matter of their sharing such properties as speed, place, time, etc., regardless of their modal, causal, probabilistic, and counterfactual differences; that is, their contingent identity seems to be a matter of their sharing their categorical properties, irrespective of their hypothetical differences.

To be absolutely clear about the difference between contingency and categoricity, consider their complements. Where a thing has its noncontingent properties necessarily, it has its noncategorical properties hypothetically.
How are a thing's categorical properties to be found? (Actually it will be simplest if we look for properties categorical as such, i.e., properties that can only be had in a manner independent of what would or could have happened.) Why not take the intuitive notion that a property is categorical just in case a thing's having it is independent of what goes on in nonactual worlds, and try to turn this into a definition? The problem is that such a definition would be circular. Suppose it is a categorical property of this hunk of clay that it is spherical. How can that depend on how the clay comports itself in other worlds? But, if you think about it, it does, in that the clay's being spherical in this world depends on its being, in those worlds, such that in this world it is spherical. The problem is that being such that, in this world, it is spherical, is a hypothetical property of the clay. So, apparently, what we really meant to say was that a property is categorical if it attaches to a thing regardless of its categorical properties in other worlds. And that is clearly circular.\(^\text{15}\)

Somehow the circularity has to be circumvented. Things are going to be coincident in a world iff they have exactly the same categorical properties there. But maybe this can be turned around: the categorical properties are exactly those which cannot tell coincident things apart.

Postpone for a moment the question of how that would help, and ask, instead, is it even true? That is, are the categorical properties the properties insensitive to the difference between coincidents? This will be the case only if coincidence is compatible with every kind of hypothetical variation, i.e., if, for every hypothetical property, coincidents can be found that disagree on it. But it is clear that ordinary

\(^{15}\text{Two remarks. As a characterization of the categorical properties, the foregoing is circular. But it does have the virtue of illustrating why not every property can be hypothetical (as is sometimes suggested). For a property to be hypothetical, whether a thing has it must depend on the things' categorical properties in other worlds; and that shows that no property can be hypothetical unless at least some properties are categorical. And, since it is relatively unproblematic that categorical properties give rise to hypothetical properties (given the present broadly essentialist assumptions), neither category can be emptied without emptying the other. So a skeptic about the distinction should maintain that no property is of either kind, not that all (some) properties are of one kind and none are of the other. [For example, Sydney Shoemaker's theory of properties as "second-order powers," though it might seem to imply that all properties are hypothetical, or, on another reading, that all properties are categorical, is perhaps better read as rejecting the distinction altogether. See "Causality and Properties," and "Identity, Properties, and Causality," collected in his Identity, Cause, and Mind (New York: Cambridge, 1984).] Second, in rejecting the proposed account of categoricity on grounds of circularity, I do not mean to imply that the account I finally give is not itself ultimately circular. Given the cumulative properties, the categorical properties can be noncircularly specified; but the cumulative properties themselves cannot be noncircularly specified, in particular not by the formal conditions laid down above.}
things do not exhibit the hypothetical variety that this would require. Among ordinary things, coincidents never differ on (e.g.) the score of fragility (if the statue is fragile then so is the piece of clay); among ordinary things, one never finds one thing accidentally juvenile, or mature, and another, coincident with the first, essentially so (simply because no ordinary thing is essentially juvenile, or mature).

So much for ordinary things. But what about things as seen from the vantage point of metaphysics? Metaphysics aspires to understand reality as it is in itself, independently of the conceptual apparatus observers bring to bear on it. Even if we do not ourselves recognize essentially juvenile or mature entities, it is not hard to imagine others who would\(^\text{16}\), and to someone who, in addition to the statue and the piece of clay, discerned a statue-cum-shards, not everything coincident with the statue would be fragile. Conversely, we recognize things, say, essentially suitable for playing cribbage, or cutting grass, which others do not, or might not have. To insist on the credentials of the things we recognize against those which others do, or might, seems indefensibly parochial. In metaphysics, unusual hypothetical coloring can be no ground for exclusion.\(^\text{17}\) Since this is metaphysics, everything up for recognition must actually be recognized; and, when this is done, there are coincidents enough to witness the hypotheticality of every hypothetical property.\(^\text{18}\)

Given information about what was coincident with what, the categorical properties could be identified: they would be the properties insensitive to the difference between coincidents. Now, as of yet, there is no information about what is coincident with what (that is why we were looking for the categorical properties in the first place).

\(^\text{16}\) To get a sense of what it might be like to countenance a creature coming into existence “in mid-life,” consider Jane Eyre’s reflections on the eve of her (anticipated) marriage to Mr. Rochester: “Mrs. Rochester! She did not exist: she would not be born till tomorrow, sometime after eight o’clock A.M.; and I would wait to be assured she had come into the world alive before I assigned her all that property.” For a creature that stops existing “in mid-life,” there are the opening lines of Neil Young’s “A Child’s Claim to Fame”: “I am a child/I last a while.”

\(^\text{17}\) Less dogmatically, there are two kinds of metaphysics: descriptive and transcendental. In descriptive metaphysics one is interested in reality as people see it; in transcendental metaphysics one tries to abstract to the largest extent possible from the human contribution. Pretty clearly, the distinction is relative. All metaphysics is somewhat transcendental (metaphysicians do not spend much time thrashing out the nature of time zones), but probably the present approach is more transcendental than most.

\(^\text{18}\) To say that everything up for recognition is actually recognized, is to say the following: given any set of worlds, and given an assignment to each of categorical properties satisfiable therein, there is something that exists in those worlds exactly and possesses in each the associated categorical properties. Call this the requirement of \textit{fullness}.
But that is not to say that none can be obtained; and, in fact, certain cases of coincidence—enough to weed out all the noncategoricals—are discoverable in advance.

To find these cases, try to imagine pairs of things that differ as little as possible from being strictly identical (for things almost identical will be contingently identical if any things are). Trivially, if \( \alpha \) and \( \beta \) are strictly identical, \( \alpha \) will exist in exactly the same possible worlds as \( \beta \), and \( \alpha \) will be coincident with \( \beta \) in all of them. To arrange for the least possible departure from this, let \( \alpha \) exist in a few more worlds than \( \beta \), but otherwise leave everything unchanged, i.e., let them be coincident in all the worlds where both exist. As it happens, that is exactly how it is with the driving home and the speeding home. Wherever the speeding home occurs, the driving home occurs too, and is coincident with the speeding home. But there will also be worlds in which the driving home is done at a reasonable speed, and in such worlds the speeding home does not occur.

Still, none of this helps with the project of explicating contingent identity, unless there is a way of characterizing the given relation—the relation between the driving home and the speeding home—which does not itself rely on the notion of contingent identity. But there is: it is the relation of refinement. Although only a fraction of all coincidents stand in the relation of refinement, this fraction is enough to weed out all the noncategorical properties.\(^{19}\) With the noncategorical properties weeded out, the categorical properties are

\(^{19}\) To see why the properties insensitive to the difference between things related by refinement can be relied on to be exactly the categorical: Call these properties the provisionally categorical properties, and call things indiscernible with respect to these properties provisionally coincident. The problem is really to prove that every provisionally categorical property is genuinely categorical (the converse is clear). Let \( P \) be provisionally categorical. Then, by the definition of provisional coincidence, \( P \) cannot distinguish provisionally coincident things. Suppose toward a contradiction that \( P \) is not genuinely categorical. Then there are \( \alpha \) and \( W \) such that \( \alpha \) possesses \( P \) in \( W \), but its possession of \( P \) in \( W \) depends on what worlds (other than \( W \)) it inhabits or on its genuinely categorical properties in those worlds. Thus, if there were something genuinely coincident with \( \alpha \) in \( W \), but differing from \( \alpha \) in the worlds (other than \( W \)) it inhabited, or the genuinely categorical properties it had in them, that thing would lack \( P \) in \( W \). Specifically, something existing in worlds \( W, W', W'' \ldots \), and possessing the genuinely categorical properties \( Y \) in \( W \) (\( Y \) is the set of \( \alpha \)'s genuinely categorical properties in \( W \)), \( Y' \) in \( W' \), \( Y'' \) in \( W'' \ldots \), would lack \( P \) in \( W \). To produce such a thing, let \( \gamma (=\alpha), \gamma', \gamma'' \ldots \) be entities satisfying \( Y, Y', Y'' \ldots \) in \( W, W', W'' \ldots \). If \( Z, Z', Z'' \ldots \) are the sets of provisionally categorical properties possessed by \( \gamma, \gamma', \gamma'' \ldots \) in \( W, W', W'' \ldots \), then, by fullness (see the preceding note), there is a \( \beta \) existing in exactly \( W, W', W'' \ldots \), and possessing \( Z \) in \( W \), \( Z' \) in \( W' \), \( Z'' \) in \( W'' \ldots \). Since a thing's provisionally categorical properties include its genuinely categorical properties, \( \beta \) meets the conditions laid down above for lacking \( P \) in \( W \). But, by its definition, \( \beta \) is provisionally coincident with \( \alpha \) in \( W \). Since \( P \) distinguishes provisionally coincidents, it is not provisionally categorical after all. QED.
isolated. And with the categorical properties in hand, contingent identity is at last explicable: things are contingently identical in a world if they have the same categorical properties there.

Trivial cases aside, things contingently identical will not be identical as a matter of necessity. But then what about the argument that purported to show that identities obtained necessarily if at all? Was the argument invalid? No; it showed that something was impossible. The question is, was the refuted possibility really that of contingent identity? Looking back at the argument, the crucial assumption was this: to be contingently identical, things have to have all their properties, up to and including properties of the form necessary identity with such-and-such, in common. If that is right, then contingent identity is, as argued, impossible. So the question is, do contingently identical things have to have all their properties, not only categorical but hypothetical as well, in common?

They do not. To agree that they did would be to concede the very point of contingent identity and to frustrate the clear intent of its advocates, which was that it was to be a relation compatible with counterfactual divergence. Understanding contingent identity as sameness of nonhypothetical properties, on the other hand, preserves its point and sustains it against the “proof” of its impossibility. Still, why did it even seem that contingent identity entailed absolute indiscernibility? Probably because it was taken for granted that contingently identical things were (at least) properly identical, only—and this was their distinction—not necessarily so. (And the expression ‘contingent identity’ can certainly be faulted for encouraging this interpretation.) Admittedly, contingent identity in this sense is not possible. But there is a better and more generous way of under-

---

20 True, Smart does go out of his way to emphasize that “the brain-process doctrine asserts identity in the strict sense” (“Sensations and Brain Processes,” op. cit., p. 145). But by this he seems to mean that he is not talking about the relation that one thing bears to another when they are “time slice[s] of the same four-dimensional object” or when they are “spatially or temporally continuous” (145). Certainly there is nothing to suggest that he had in mind a contrast between “strict identity” and coincidence. What is clear is that he took “strict identity” to be a relation fully compatible with hypothetical dissimilarity.

21 Although some philosophers would say that identity itself can obtain contingently. To some extent, such philosophers can be seen as questioning the notion that is here called “identity proper” and as taking something roughly analogous to what is here called “coincidence” to be all the identity there is. Since this relation, which, relative to their schemes, probably deserves to be called “identity proper,” can obtain contingently, the kind(s) of contingent identity they advocate is (are) in a certain sense more radical than the kind assayed here. See, for example Allan Gibbard, “Contingent Identity,” Journal of Philosophical Logic, iv, 2 (May 1975): 187–221; David Lewis, “Counterpart Theory and Quantified Modal Logic,” this journal, LXV, 5 (March 7, 1968): 113–126, and Counterfactuals (Cambridge, Mass.: Harvard, 1973); and Robert Stalnaker, “Counterparts and Identity,” Mid-
standing contingent identity: strict and contingent identity are different relations, and, because of their differences as relations, one can obtain contingently whereas the other cannot. It only remains to spell out the formal details.

V. MODELING CONTINGENT IDENTITY

Formally, a property \( P \) is categorical iff necessarily, if \( \alpha \) and \( \beta \) are related by refinement, then \( \alpha \) has \( P \) iff \( \beta \) does, i.e., if

\[
(\forall W)(\forall \alpha, \beta \in D(W))(\alpha \leq \beta \Rightarrow (\alpha P(W) \iff \beta eP(W))).
\]

What is the relation between the cumulative properties and the categorical properties? Closure implies a partial answer.

Prop. 2 If \( \Omega \) is closed, then every cumulative property is categorical.

Proof: Let \( P eX \), and let \( \alpha, \beta eD(W) \), \( \alpha \leq \beta \). By \( u \)-closure, there are \( \alpha^* \) and \( \beta^* \) in \( D(W) \) such that \( \forall P eX(\alpha eP\alpha) \Rightarrow \alpha^* eP\alpha \) and \( \forall P eX(\beta eP\beta) \Rightarrow \beta^* eP\beta \). We show that \( \alpha P(W) \iff \beta eP(W) \). Since \( \alpha \leq \beta \leq \beta^* \), \( \alpha \leq \beta^* \). Therefore, \( \beta P(W) \Rightarrow \beta^* eP\beta \Rightarrow \alpha P(W) \) (by \( d \)-closure). For the converse, notice first that \( \beta \leq \alpha^* \). For if \( Q eE_X(\beta) \), then, by \( d \)-closure, \( \alpha eQ\alpha \); whence \( Q eE_X(\alpha^*) \). Since \( \beta \leq \alpha^* \), \( \alpha P(W) \Rightarrow \alpha^* eP\alpha \Rightarrow \beta eP(W) \) (by \( d \)-closure). \( \square \)

Things are coincident in \( W \)—written \( \alpha \approx_w \beta \)—if they have the same categorical properties there. But, for the definition of categoricity to achieve its purpose, the system of coincidents has to be full or complete. Informally, this means that every point in the logical space of possible coincidents must actually be occupied; formally, for any (partial) function \( f \) from worlds \( W \) to things existing in \( W \), there is a thing existing, and coincident with \( f(W) \), in exactly the worlds in \( f \)'s domain. \( \Omega \) is full if it satisfies

\[
(F) \quad \forall f: W e\mathcal{W} \rightarrow f(W) eD(W) \exists \alpha [\mathcal{W}(\alpha) = \text{dom}(f) \& \forall W e\mathcal{W}(\alpha) \wedge W f(W)]
\]

Prop. 2 showed that, if \( \Omega \) is closed, then every cumulative property is categorical. For the converse, let \( \Omega \) be maximal closed if

\[
(M) \quad \Omega = \langle \mathcal{W}, X \rangle \text{ is closed, and there is no } X' \text{ extending } X \text{ such that } \langle \mathcal{W}, X' \rangle \text{ is closed.}
\]

If \( \Omega \) is maximal closed and full, then every categorical property is cumulative. In other words, a property is cumulative if and only if it is categorical.

west Studies in Philosophy, xi (Minneapolis: Minnesota UP, 1986). (Take note: as a descriptive account of these authors' theories, which are anyway not very similar to one another, the above is not reliable.)
Prop. 3 Let $\Omega$ be maximal closed and full. Then

$$\forall P \ [P \text{ is cumulative } \iff P \text{ is categorical}]$$

Proof: $[\implies]$ This is just Prop. 2. $[\impliedby]$ Let $P$ be categorical. I claim that $\langle W, X + P \rangle$ is closed. For u-closure, let $Z \subseteq X$ and suppose that $\alpha$ has $Z + P$ in $W$. By fullness, there is an $\alpha^*$ which exists in $W$ only and which is coincident with respect to $(X)$ with $\alpha$ in $W$. Since $\alpha^*$ exists in $W$ only, it has all its properties essentially. In particular, $\alpha^*$ has all of $\alpha$’s categorical (w.r.t. $X$) properties essentially, and so (by Prop. 2) $\alpha^*$ refines $\alpha$ (w.r.t. $X$). Since $P$ is categorical (w.r.t. $X$), $\alpha^*$ has $P$ in $W$ too, and so it has $P$ essentially in $W$. Thus $\alpha^*$ has $(Z + P)^D$ in $W$. For d-closure, let $Z \subseteq X$ and let $\alpha \leq \beta(\alpha(z + P)^D[W]$. By the d-closure of $\Omega$, $\alpha Z[W]$, and, since $P$ is categorical (w.r.t. $X$), $\alpha P[W]$ too. Since $\langle W, X + P \rangle$ is both u-closed and d-closed, $P$ is in $X$. $\square$

VI. ESSENCE AND IDENTITY

Can distinct things have the same cumulative essence? So far, nothing prevents it. For example, there is nothing to rule out the following: there are exactly two possible worlds, $W$ and $W'$; $\alpha$ and $\beta$ exist in both worlds; $\gamma$ exists in $W$ alone; and $\gamma'$ exists in $W'$ alone. In this situation $\gamma$ will have to refine both $\alpha$ and $\beta$ in $W$, and $\gamma'$ will refine both $\alpha$ and $\beta$ in $W'$. From the fact that $\alpha$ and $\beta$ have a common refinement in each world, it quickly follows that they are coincident, i.e., have the same categorical properties, in each world. But, by Prop. 3, the categorical properties are exactly the cumulative properties; and, if $\alpha$ and $\beta$ share their cumulative properties in every world, how can they have different cumulative essences?

Actually, this raises the critical question, avoided until now, of how coincidence and identity are related. Can $\alpha$ and $\beta$ exist in the same worlds, be coincident in all of them, and still be distinct? It is hard to imagine how they could. For, presumably, distinct items differ in one or another of two ways. Either they exist in different worlds, or they exist in the same worlds and are unlike, i.e., have different categori-

---

$22$ Although it is wrong to try to explicate contingent identity in terms of identity of modal states (the notion of modal state depending on that of contingent identity), Prop. 3 suggests a way to define modal states so that the equation comes out true. Call $\alpha^*$ $\alpha$’s state in $W$ iff $\alpha^*$’s cumulative essence is exactly the set of $\alpha$’s categorical properties in $W$. To see that if $\alpha$ exists in $W$ its state in $W$ exists too: By fullness, there is a $\beta$ existing in $W$ alone and coincident with $\alpha$ there. Thus $\beta$’s categorical properties in $W$ are exactly $\alpha$’s. By Prop. 3, $\beta$’s cumulative properties in $W$ are exactly $\alpha$’s categorical properties in $W$. Since $\beta$ has all its properties essentially, $\beta$’s cumulative essence is the set of $\alpha$’s categorical properties in $W$. Now it is easy to verify that things are coincident in a world iff they have strictly identical states there: $\alpha$ coincides with $\beta$ in $W$ iff $\alpha$ and $\beta$ have the same categorical properties in $W$ iff anything whose cumulative essence is the set of $\alpha$’s categorical properties is also something whose cumulative essence is the set of $\beta$’s categorical properties iff any state of $\alpha$ in $W$ is a state of $\beta$ in $W$. (For the uniqueness of $\alpha$’s state in $W$, see Prop. 4.)
cal properties, in at least one of them. Between distinct things, that is, there have got to be either intra-world or extra-world differences.

But what is the argument for this? If things exist in the same worlds, then, unless they have different categorical properties in at least one of them, the hypothesis of their distinctness can find no foothold. Take the standard example of "indiscernible" spheres afloat in otherwise empty space (suppose for argument's sake that they exist in no other world). If the spheres were in exactly the same place, could they still be reckoned distinct? An hypothesis so gratuitous is beyond not only our powers of belief, but even our powers of stipulation. If, on the other hand, the spheres are in different places, then they differ on the (presumably categorical) properties of being in those places. (The properties have to be different, because they map the world in question to different spheres).23

Call a property-model separable if it satisfies

(5) \( \forall \alpha \forall \beta \left[ (\mathcal{W}(\alpha) = \mathcal{W}(\beta) \& \forall W \in \mathcal{W}(\alpha) \cup \mathcal{W}(\beta) \ x \approx_w \ y \Rightarrow x = y \right] \)

The last proposition shows that, if \( \Omega \) is (besides being closed) separable, then things with the same cumulative essence are identical.

Prop. 4 Let \( \Omega \) be closed and separable. Then

\[ \forall \alpha \forall \beta \left[ E_X(\alpha) = E_X(\beta) \Rightarrow \alpha = \beta \right] \]

Proof: Let \( \alpha \) and \( \beta \) have the same \( X \)-essence. Since \( \alpha \) and \( \beta \) \( X \)-refine each other, by Prop. 1 they exist in the same worlds. By the definition of \( X \)-categoricity, in each of these worlds any \( X \)-categorical property attaching to either attaches also to the other. Thus \( \alpha \) and \( \beta \) have the same \( X \)-categorical properties, and so coincide, in every world where they exist. By separability, \( \alpha \) is identical with \( \beta \).

\( \Box \)

To this extent, essence determines identity.24

---

23 Granted, one cannot identify these properties without appeal to the objects that have them; but the claim was that they have different categorical properties, not that one can distinguish them by their categorical properties. Granted also, except in connection with the world in question, the properties' extensions will be to a large extent arbitrary (when is something in this world in the same place as the first sphere in that one?); but that does not matter, so long as the arbitrary choices are made in such a way that the resulting properties are categorical.

24 Even if this result is accepted, there is plenty of room for doubt about its precise significance. Briefly, one worry is that to distinguish \( \alpha \)'s cumulative essence from \( \beta \)'s, one would already have to be able to distinguish \( \alpha \) from \( \beta \). But this seems to confuse the metaphysical thesis that distinct things have different essences with the epistemological doctrine that distinct things can always be distinguished by their essences. Second, not everything here called a "property"—basically, functions from worlds to extensions—is a genuine property. If this means that genuine properties are not functions, this is granted; but it does not matter, if, for every
VII. APPLICATIONS

(A) Treating contingent identity as sameness of categorical properties goes part of the way toward solving a problem David Wiggins raises for relative identity in *Sameness and Substance*. He argues there that, since (i) what sets identity relations apart from the common run of equivalence relations is their satisfaction of Leibniz's law, and (ii) no variety of relative identity can satisfy (an unrestricted version of) Leibniz's law, (iii) relations of relative identity are not identity relations (pending discovery of a suitably restricted form of Leibniz's law). To answer this argument, one would need an unconstrained law of the form: if \( \alpha \) is the same \( f \) as \( \beta \), then \( \alpha \) and \( \beta \) have thus-and-such properties in common. However, Wiggins thinks such a law will prove impossible to formulate:

> It seems that the very least we shall require is more information about the case of the restricted congruence that results from the g-identity, for some one sortal concept g, of \( x \) and \( y \). No stable formulation of restricted congruence is available, however. Nor, I suspect, will it ever be given (39).

But, if contingent identicals are seen as the same concrete thing, then a rigorous restriction of Leibniz's law is at hand: if \( \alpha \) and \( \beta \) are the same concrete thing, then they have the same categorical properties.\(^{25}\)

(B) Nearly everyone's gut reaction to functionalism is that phenomenal properties, at any rate, cannot be functional, because nothing functional can attain to the "manifest" character of felt experience. Perhaps this idea finds support in the categorical/hypothetical distinction. The property of playing functional role \( R \) is the property of bearing certain complicated counterfactual relations to inputs, outputs, and the players of various other functional roles. Details aside, such a property is obviously hypothetical. But the property of painfulness (note: not the property of causing pain, but that of being pain) seems to be a categorical property *par excellence*.

---

\(^{25}\) Whether this helps with the general problem of saying what properties relative identicals must have in common is another question, but one perhaps worth exploring. See also Nicholas Griffin, *Relative Identity* (New York: Oxford, 1975), secs. 1.2 and 8.5.
Therefore, painfulness is not a functional property. (Note that this affects only the version of functionalism that flatly identifies mental properties with functional properties.)

(C) That mental and physical events are not properly identical is argued not only by their essential differences (emphasized by Kripke), but also by their causal differences. Suppose Smith’s pain is identical with neural event $\nu$, which causes neural event $\varepsilon$. Then the strict identity theorist will have to say that Smith’s pain caused $\varepsilon$; but that seems questionable, because $\nu$’s being Smith’s pain contributed nothing to its production of $\varepsilon$ (one wants to say: even if $\nu$ had not been Smith’s, or any, pain, $\varepsilon$ would still have eventuated). If Smith’s pain and $\nu$ are only coincident, on the other hand, then naturally they will have different causal powers and susceptibilities; and a sensitive counterfactual theory of causation might be able to exploit their essential differences to predict their causal differences.\(^{26}\) Irrelevant qualifications aside, an event $\alpha$ causes an event $\beta$ only if it is \textit{required} for $\beta$, in the following sense: given any (actually occurring) event $\gamma \approx \alpha$ whose essence does not include $\alpha$’s, if $\gamma$ had occurred in $\alpha$’s absence, $\beta$ would not have occurred; and only if it is \textit{enough} for $\beta$, in the following sense: given any (actually occurring) event $\gamma \approx \alpha$ whose essence is not included in $\alpha$’s, $\gamma$ is not required for $\beta$. As for Smith’s pain (call it $\pi$), that $\varepsilon$ would have occurred even in $\pi$’s absence, provided that $\nu$ had still occurred, shows that $\pi$ is not required for $\varepsilon$; and that $\nu$ is (let us assume) required for $\varepsilon$ shows that $\pi$ is not enough for $\varepsilon$ either. Complementary considerations show how it can be Smith’s decision, rather than the corresponding neural event, that causes her action.

\[\text{STEPHEN YABLO}\]

University of Michigan/Ann Arbor

\(^{26}\) Thanks to Barry Loewer for talking to me about this; he and Paul Boghossian are working along similar lines.