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**THE PERSISTENCE OF MATERIAL INDIVIDUALS:  
FROM INANITY TO SELF-DIRECTED PROPENSITY**

When discussing Kripke's claims concerning the material origins of a certain material table, one presumably first made of wood, we considered not only some of the table's *origination conditions*, we also considered some of its *persistence conditions*. As you'll recall, we said that, as concerns the table's matter, its origination conditions were at least somewhat strict – it couldn't have originated with matter completely other than the matter that actually did first constitute it. And, as you'll also recall, we said that, as concerns the table's constituting matter, its persistent conditions were much more lenient – providing that the changeover should be aptly gradual, the table could come to have, in the future, matter entirely distinct from that which constitutes it now, or which constituted it when it was indicated by Kripke.

Even as a material individual's origination conditions were, in a certain obvious respect, our central topic in the previous chapter, so, in this present one, a material object's persistent conditions will be, in a similarly obvious respect, our central topic.

At least for the most part, statements of the sorts I'll presently be discussing go back very much further than any of Kripke's writings, or lectures. And, those that are of

rather recent vintage are quite close cousins of philosophical claims first found in the literature several centuries ago, with a few around for several millennia.<sup>1</sup> The objects whose persistence conditions exercised these old philosopher, and ever so many current philosophers, too, are ordinary spatial concreta. In fact, as it appears, just about all of these ordinary spatial objects are of a sort that, in the actual world's current Eon, has as its instances nothing but material complexes, as with the sorts *rock* and *table*, and *ship* and *sculpture*, and so on. As the particulate form of our shared Scientiphicalism holds, and as may very well be true, for all I can say, each of these ordinary material complexes will be constituted by, or composed of, ever so many physically smaller and simpler natural material parts, as with an ordinary object's many molecules, which are in turn composed of its yet more numerous atoms, that are in turn composed of its still yet more numerous elementary particles.

In this present chapter, my discussion won't turn on any such presumed features of the ordinary material objects to be considered. Indeed, nothing I say will presuppose, even, that, in any really robust sense of "part," any of these ordinary objects have any substantial physical parts: Even if every single one of our rocks should be composed entirely of perfectly continuous matter – and, in the bargain, each should be entirely lacking in any genuinely substantial physical parts – my remarks will be perfectly pertinent to all the ordinary entities we'll be considering. At the same time, of course, they'll also be perfectly pertinent to any ordinary objects, like tables, that each may be composed of very many smaller natural parts – providing only that, at least when each one of many small things is aptly related to many others, (sometimes) many small and simple physical things can (and, presumably, they often do) compose larger, more

complex material wholes. (Though I'll discuss to discuss this proviso in a later chapter, here I'll be happy to grant the provisional point's truth, throughout.)

With the ordinary material objects I'll be discussing, it's natural for us to consider them as enduring, or as persisting, at least when the object undergoes no nonrelational change, or no intrinsic alteration, as with a ball that remains the very same shape, and the very same size, and so on, even if other balls should move around it or, more radically, they should all be utterly annihilated. Perhaps for a very long time, our intrinsically unchanging ball will continue to exist - the whole of it will do that - even as its annihilated early contemporaries ceased to exist, and they didn't persist, for nearly as long as it did, and is still doing.

Against such natural thoughts as the previous paragraph featured, some philosophers prefer to think of balls – and also basic physical objects, say, electrons, – as being *four-dimensional concreta*.<sup>2</sup> Rather than thinking of a ball, say, as being an object that occupies various (three-dimensional) spatial regions for various periods of time, or for perhaps infinitely many instants of time, they prefer to think of the ball as occupying a (four-dimensional) region of *space-time*, a sort of fusion of space and time. One way that (many of) these philosophers like to differentiate themselves from more ordinary thinkers – or from more old-fashioned people, they might say – is to say that the likes of a ball *doesn't really endure*, or *persist temporally* – even as it *doesn't do anything temporally*. Rather, an ordinary ball *perdures*, or it *persists spatiotemporally*. For these philosophers, our considered ball is *somewhat* like what more ordinary thinkers would consider *the history of* a plain old three-dimension spatial material object. (Of course, we ordinary thinkers don't say that the history of a ball *exists* for a certain long temporal

period – nor do we think any such thing - though we do think that the ball’s history may *obtain* during all of that long period. And, we may think even that the ball’s history may extend, from that long period’s beginning to its temporal end – without thinking that this extension is anything much like straightforward spatial extension. But, by now, I may be digressing for too long, I guess. So, I return to the main order of business.)

At all events, none of that will make any difference to this present chapter’s topics: Just so, when I (explicitly) disclose what I’ll call an inanity concerning *persistence*, I’ll be (implicitly) suggesting, in the bargain, a parallel inanity for the four-dimensionalists (and, presumably, for any far-out cousins they may have). Using a term that some of them favor, there’ll be suggested, in the bargain, a *parallel* inanity concerning *perdurance*.

That’s more than enough verbiage both abstruse and abstract. It’s high time to get down to brass tacks.

### **1. Material Sculptures and Pieces of Matter**

A certain artist, whom we may call “Art Garfinkel”, often visits so-called junkyards, in search of such scraps of metal as will not just catch his eye, but, more than that, which will hold his attention quite enjoyably. On one of these visits, as it happens, he finds most appealing a certain junky piece of copper, shaped rather more like a lump than a disk. Purchasing the piece for just a pittance, and naming his acquisition, *Peter Copperfield*, Art has it in mind to use this newly named Peter in a certain moderately complex artistic endeavor, a brief description of which I now provide.

Covering Copperfield with a suitable sort of wax, Garfinkel first uses that purchased piece to make a suitably shaped mold, the mold being made of some noncuprous substance, or of some noncoppery material, that's very well suited for making a mold of the sort Art's seeking to produce. What the mold will be used for, once completed, is to make a sculpture, from molten copper. For Garfinkel, the point of that is this: After that copper hardens, he will have produced, in that way, a sculpture that, at least in all intrinsic regards and respects, is extremely like Peter Copperfield, the purchased piece of coppery junk. The newly hardened piece of copper will be as nearly like Copperfield as it is within the power of a man to produce, which is, as we know, very close to being exactly alike, or absolutely similar – in (just about) all nonrelational respects, or in (just about) all purely intrinsic regards. Using this mold, Art pours into it just as much molten copper – down to the last one thousandth of a milligram – as is contained in Copperfield. This copper hardens into a piece of copper that's always spatially distant from, and ever so separate from, the purchased Copperfield. This newly hard piece of copper contains no matter that ever served to compose that bought item, Peter Copperfield. Accordingly, Garfinkel names the piece of copper he intentionally produced, in this way, "*Peter Copyfield*".

For a few months, Art wonders whether Peter Copyfield constitutes an object that's worthy of being rightly considered a work of art. And, our artist wonders, if Copyfield does constitute an artwork, is that constituted entity worthy of being one of those to be placed on display at his upcoming exhibition, Momentous Metallic Matters, an event scheduled to begin this coming September, in Manhattan's second most fashionable gallery? After some deep meditation, AG thinks that, at least if the sculpture

that Copyfield should constitute will bear a suitably impressive name, then PC will indeed serve to constitute a work of art – indeed, one that should sell at the very highest price, a figure even higher than the very high prices assigned to the other eleven artworks to be featured in the exhibition. Or, if it's not strictly true that PC itself will then constitute an artwork, then it is true, at least, that the copper constituting PC will then constitute (as well) a genuine work of art.

So it was that, entirely made of copper, there came to be *Untitled #42*, an artwork that, fairly rocking even the coolest of the cognoscenti, brought AG a cool \$6,000,000, with an equal amount going, of course, to his dealer, the owner of that very fashionable exhibition space. As many do well to agree, *Untitled #42* is a very impressive sculpture.

*Untitled #42* now sits in one of the living rooms, of one of the penthouses that belong to the sculpture's owner, a Forbes-certified billionaire. As metaphysicians greatly enamored of inanity, we may now ask: What are the *persistence conditions* of *Untitled #42*, the expensive copper *sculpture*? And, of equal interest, we may also ask: What are the *persistence conditions* of Peter Copyfield, the *piece* of copper composed of just the very same copper that, at this very same time, also serves to compose that very pricey copper sculpture, *Untitled #42*?

In *one* way, at least, the persistence conditions of *Untitled #42* are *stricter than* those of Peter Copyfield. There are certain processes (of change) that *won't allow* *Untitled #42* to *continue to exist*, and will thus have it that the sculpture *then ceases* to exist (*whatever* might be true as regards its *still later* existence) but, even so, these same processes *will allow* Peter Copyfield, the piece of copper, to continue to exist.

Let me explain: Quite independently of any intentions AG ever had, or any he now may have, we can feed the salient copper into, or through, a wire-forming copper-extruder. The resulting piece of copper will be very long and very thin: Along “one of its dimensions”, it will extend for a very great length – far, far greater than its “length” along its other dimensions, taken as perpendicular to the aforementioned dimension. And, of course, it will also be very much longer than ever was Untitled #42, indeed, just exactly as much longer.

Going by my own reactions to this *Extruder Case*, after it's all been fed through the extruder, the copper that served to compose Untitled #42 won't still compose that sculpture. Indeed, and especially as the sculpture's involvement with the extruder has nothing to do with our friend Art, once #42 has been so radically transformed shapewise, the copper that constituted it won't constitute any sculpture at all – neither the one whose first name is “Untitled” nor any other. Along with that, and comporting very well with it, my reactions have it that, right after the extruder's done all its work, Untitled #42 won't then exist.

Suppose that I'm on target here, if only to help promote a useful discussion. Then, as far as Extrusion is concerned, the persistence conditions of Untitled #42 are quite strict persistence conditions.

Now, what about Peter Copyfield, the *piece* of copper; how will *it* fare in a shape-changing encounter with our wire-extruder? When all its constituting copper has been fed through the wire-extruder, will *it* continue to exist? As far as my own reactions to the case can indicate, it will indeed survive the Extrusion: Right after the Extrusion, the copper that formerly served to compose, and to constitute, both Copyfield and

Untitled #42 *will still* serve to compose the *very same piece* of copper – namely, Peter Copyfield; It's just that this piece of copper's shape will have been changed pretty remarkably, from a rather lumpy shape, as I've said, to such a very long and wiry shape as to no longer qualify as being the shape of any lump, properly so-called.

At least apparently, what lessons may we learn from these contrasting intuitions, each apparently on target for the case to which it pertains? Well, as it appears, one lesson may be this: Even as a perfectly cohesive and materially continuous copper *sculpture* needn't be any *piece* of copper, so Untitled #42 isn't the same concrete object as Peter Copyfield. And, related to that, there may also be this other lesson: After the salient copper hardened and before anything was placed in the Extruder, there were at least two different concrete particulars in our situation, each composed of the same hardened copper as composed the other, and each wholly spatially coincident with the other.

At least at first glance, that's quite certainly quite right. Now, there are some mainstream philosophers that will be terribly suspicious about what our first glance certainly appears to reveal. Thinking themselves to be very seriously and strictly philosophical, they will hold that, exactly occupying a given region of space at a certain particular time, and composed entirely of just some certain matter, though there must be a material individual right then and there, there cannot be more than just that one material individual. So, it can't possibly be that, where there's the material individual that's the copper sculpture Untitled #42, composed of just its constituting copper, there's also another material individual right there, right then, composed of just that same copper, neither the alleged Peter Copyfield nor any other material thing. All this stuff about

persistence conditions, they may say, amounts to nothing more than just so much fancy confusion. About what these philosophers hold, I'll now say just these three things.

First, the position they offer is just another analytically inane proposition.

Second, and even as it goes against our commonsense thinking, it's very probably an incorrect inanity, whilst what I've been assuming, in contradiction to that, is very likely a quite correct analytically inane proposition.

Third, in the next chapter I'll observe a novel position, itself analytically inane, according to which the allegedly strict view we're considering is actually an ontologically profligate position: Where there's a region that, at any given time, is exactly occupied by just some certain matter, there's then just that matter there, and nothing more, certainly not any individual which the matter constitutes or composes. But, if go on about this, I'll be getting ahead of myself.

At all events, there's no reason for us to worry about the allegedly serious and strict philosophical vision we've just been discussing. Rather, and now much more instructively, we may continue to suppose that, exactly occupying the region we were considering just a moment ago, there are two numerically different material individuals, Untitled #42 and David Copyfield, each wholly coincident with the other, and each composed of the very same matter as the other. Even as our intuitions on the cases deliver, that's quite certainly quite right.

Well, there's at least *some* issue, at any rate, about which our thinking here is quite correct, even if it might be an issue that's fairly flooded with inanity. But, then, what issue is this? Might we be at a loss for words here?

No; of course we're not. Indeed, even in philosophically very fashionable terms, we may say, well enough, just what issue it is on which we rightly remarked. Just so, we philosophical sophisticates may take what next follows to be a perfectly correct remark, however inane the truthful comment should be: In *certain* ways that we've presented, a copper sculpture is different from a piece of copper. And, whatever else they might also involve, *these* ways will concern the *persistence conditions* of (some things of) the two sorts we've just been distinguishing - the sort *copper sculpture*, on the one hand, and, on the other hand, the sort *piece of copper*. In particular, there's at least this difference between the two: In *one* way, at least, the persistence conditions of Untitled #42 – and, presumably, those of very many other copper sculptures, too - are *stricter than* those of Peter Copyfield, and also, presumably, those of many other pieces of copper.

Should we think, then, that copper sculptures are, at least conceptually, more special sorts of things than are (mere) pieces of copper? No; not really. For, even in just this neck of the conceptual woods, the situation is rather more complicated than what that question's suggests. Let me explain.

In at least one *other* way, the persistence conditions of Untitled #42 are *laxer than* Copyfield's persistence conditions; in such *another* way, it's the *piece* of copper's persistence conditions that are *stricter* than those of the expensive copper *sculpture*. Here's what's essentially the same point: Quite different from (the process of) Extrusion, there are certain *other* processes that will have *Peter Copyfield* cease to exist (at least temporarily) but *they won't* have *Untitled #42* cease to exist (not even temporarily). Rather, they'll allow that *sculpture to continue* to exist. Again, let me explain.

When it's serving to compose, or to constitute, both Copyfield and U. #42, consider the *copper* in question. This copper may be suddenly cut in half – whether by a vandal with a chisel, or whether by naturally occurring bolts of lightning, or whether in some still very different way – but, in any event, quite independently from any intentions that AG ever had, or now has. (This will be very like what happened to our stone, Stan, in Stan's Halving Slicing Case.) Putting things piecewise, what results is this: There are exactly two resultant (maximally continuous, or free-standing) pieces of copper, each (about) equal to the other in size - as concerns mass, and also as concerns volume, and also as concerns whatever other measure might reasonably be deemed relevant here.

Going by my reactions to this *Bisection Case*, as I'll naturally name it, neither of these relatively small resulting pieces will be Peter Copyfield – nor will anything else then be PC. Right after the Bisection – and with nothing like rejoining ever having been done – Copyfield doesn't exist. The “original” piece of copper, Peter Copyfield, has “gone out of existence.” What's now mostly saliently in existence, in that biggish part of the gallery, are exactly two very salient pieces of copper. Each of them is *just a descendant* of PC; at any rate, neither is PC itself.

Please let's be very clear about the question that's currently at issue, and about what I just said about just that question. The question is this: Right at the *culmination* of the bisection – and, given that nothing much else takes place, right after that, as well - will that very *piece* of copper exist? And, what I've said about that question is this: At just that time, at the very end of the envisaged Bisection, Peter Copyfield *won't exist*.

What are my reasons for my saying that this piece of copper then won't exist? At least for the most part, they consist of thoughts like these ideas: First, at the Bisection's

culmination, there are just two salient relevantly biggish pieces of copper – call them, say, *Copyfield-descendant-on-your-left* and *Copyfield-descendant-on-your-right*. Now, as appears quite clear, for being our original piece of copper, or for being Peter Copyfield, each of them is a better candidate than is anything else, or than is any third thing. But, even by quite a long shot, each of them fails to be a good enough candidate. Why? Well, when the price to be paid is the failure of the other candidate, tied best or nearly tied best, can possibly succeed. So, at our Bisection's end, there's no Peter Copyfield; right then, nothing's that piece of matter.

Here is a question about which I've said nothing, and which is quite distinct from the question currently in focus: After Peter Copyfield's Bisection, will there ever again exist that Copyfield, that very same piece of copper? Suppose that, after there are just the two separate salient pieces, each quite distant from the other, the copper composing them later is all fused together, so that all the copper is cohesively arranged just as it was when, right before Bisection, it last served to compose Peter Copyfield. In such an event, will the copper again compose Copyfield? Truth to tell, I'm quite unsure whether this other question should receive an affirmative answer or, alternatively, it should get a negative answer or, yet another option, it should receive no definite answer at all. But, for our present discussion, none of that is of any great importance. For, and just as I said, whatever may be true of what happens later, at any rate, right when our Bisection's come to its end, our original piece of matter doesn't exist.

By contrast with the failed persistence of Peter Copyfield, when Copyfield undergoes Bisection, the celebrated sculpture *Untitled #42* will successfully survive in its Bisection Case. At least things certainly seem that way, especially if we suppose, as is

quite proper for us here to do, that the two (equal-sized) copper pieces, resulting from the Bisection, can be nicely rejoined later on, perhaps via a suitable metallurgical procedure. How nicely rejoined must that be? Well, as should be obvious, it's just nicely enough, of course, for the expensive sculpture to be *restored* - perhaps not absolutely perfectly restored, but, rather, restored well enough for the sculpture to be in very much the same wholesome condition as it enjoyed before, when first placed on display. Given that supposition – and maybe some other equally undeniable contingent thoughts – a (paradigmatically one-piece) copper sculpture may still exist, even when it's been broken in two, into two equal-sized pieces.

So, even while the copper sculpture, *Untitled #42*, (conceptually) *can* survive *its* Bisection Case, still, and by contrast, the *piece* of copper, Peter Copperfield, (conceptually) *can't* survive *its* (perfectly parallel) Bisection Case. This will be so even while each of the two cases takes place at just the same time, and at just the same place, as does the other.

In certain ways, as I said, the persistence conditions for a copper sculpture are *laxer than* the persistence conditions for a piece of copper. (When we focus on just *these* ways, then a (mere?) *piece* of copper may seem “metaphysically more special” than a copper sculpture, than even a most highly extolled and artistically excellent sculpture.) This will be so even though, and as we've previously observed, in certain *other* ways, the persistence conditions for a copper sculpture are *stricter than* the persistence conditions for a piece of copper – and, so, they're *certainly not laxer than* the latter. As I said before, and as you may now agree, what's going on, in this little neck of the conceptual woods, is a fairly complicated business.

As I strongly suspect, in all this fair complexity, there's nothing that cuts any concrete mustard: However complex, it's all analytically concretely inane. How might my suspicion be confirmed?

There are at least two main ways for us to move in the indicated intellectual direction. In the next five sections – in sections 3 through 7 - I'll try to exploit one of these two ways. And, in the three sections following them – in sections 8 through 10 - I'll exploit the other way. When all that's done, we'll be more confident that, with anything much like this talk of persistence conditions, little more is expressed than just so very many concretely inane propositions..

## **2. Are There *Inconveniently* Problematic Persisting Particulars?**

To move on with our business in a pretty rapid fashion, let's agree to use a lot of fashionable terminology, even though we may have many reservations about the trendy ways of talking. So, let's agree to be happy with our saying things like these: The two-word expression “copper sculpture” *expresses* the *concept (of a) copper sculpture*. Each of the copper sculptures *falls under* that very concept, and nothing that's not a copper sculpture falls under it. As well, each copper sculpture *satisfies* that concept, while nothing else satisfies it. Correlatively, and for its part, that concept *is satisfied by* each of the copper sculptures, and it's *not satisfied by* anything *not* a copper sculpture. Equally, the concept of a copper sculpture *is true of* each of the copper sculptures, and it's *not true of* anything *else*, not a copper sculpture.

In parallel with all that, there'll be all this: The three-word expression "piece of copper" *expresses the concept (of a) piece of copper*. Each of the pieces of copper *falls under* that very concept, and nothing not a piece of copper does that; and so on.

That said, here are some further fashionable things for us to say: Even as the persistence conditions for copper sculptures are very different from the persistence conditions for pieces of copper, so the concept of a copper sculpture must be a quite different concept from the concept of a piece of copper. (This is a point that goes beyond the perfectly patent thought that the expression most standardly used, by English speakers, to express the concept of a piece of copper – the expression "piece of copper" – is very different from the expression that's so used, by such speakers, to most standardly express the concept of a copper sculpture – the expression "copper sculpture." For one thing, the expression "piece of copper" comprises precisely three English words, while the other expression, "copper sculpture" comprises only two such words. Obviously, that one's not even a close call. What's quite close to being the same as the point about the two concepts may be this idea, concerning two correlative *semantic conditions*: The semantic conditions of "piece of copper" are quite different from those of "copper sculpture.")

Indeed, so different is the concept of a piece of copper from the notion of a copper sculpture that, quite as we've lately observed, there are very many items (even actual, not to mention merely possible) which satisfy the former concept without any of them satisfying the latter not only as with copper wires produced by vandals from lumpy copper sculptures, but also as with the many copper wires produced by industry, and,

what's more, as with the very many tiny pieces of copper, each even smaller than a piece of wooden sawdust, all produced as by-products of industrial copper grinding processes.

To drive home the point that what we have here are two very different notions, or concepts, we do well to notice that there are many objects, as well, which satisfy only the concept of a copper sculpture, without ever satisfying the concept of a piece of copper. Or, at the very least, this will be so provided only that there really are some (such things as are) copper sculptures and that there really are some (such things as are) pieces of copper – both of which points we're here happily supposing. For a now-familiar example, there are broken copper sculptures which, at least for some period of time, are in two roughly equal pieces.

Though it will be more a repetition of by-now familiar matters than any impressively informative explanation, we may amplify upon the previous paragraph's prime points by saying this: One *reason that* the concept of a copper sculpture is so different from the concept of a piece of copper – and, of course, vice versa - is that the persistence conditions of the former concept are so different from those of the latter idea.

No surprise, the point just made greatly generalizes: Whenever there's a particular concept – we can call it *Conrad* - which has certain specific persistence conditions, say, the conditions *such-and-such*, and there's also a concept – we can call it *Constance* - which has certain *different equally specific persistence conditions*, *not* the conditions such-and- such, but, rather, the conditions *so-and-so*, right then there'll two very *different* concepts, Conrad and Constance, each an idea that's quite distinct from the other. There *won't* be, right then and there, just *one single concept* with two different *names*, “Conrad” and “Constance.” Though “lawyer” and “attorney” may well be (at

least something very like) two different words for, or two different names of, the very same single conception, nothing like that's at work in the case we've just abstractly imagined. Rather, "Conrad" is a word for, or a name of, *one* concept, and "Constance" is a word for, or a name of, *another* conception, a perfectly distinct idea. So, if Conrad should be the concept of a lawyer, we'll then know (pretend please) that Constance isn't the concept of an attorney. Perhaps Constance may be the concept of a judge, or the idea of a physician, or, rather further afield, the notion of a copper sculpture.

Whatever it is that concepts may be - on *our assumption* that there *are* such things as these - there'll be an enormous number of the items, presumably a very large *infinite* number of them. At all events, there'll be far more concepts than just those ideas which are quite *conveniently expressed* in English or, for that matter, in any other earthly natural language. In short, there'll be far more ideas than those for which, in our natural languages, there are (already) available happily short expressions. Almost at will, we may just monkey about and, willy nilly, we'll have latched onto one or another of these "inconvenient concepts" – usually a notion that, in any very specific or quite robust way, nobody's ever latched onto before, or previously expressed, employed, mentioned or pondered. This happened, I'm pretty sure, in the previous chapter, with my latching on to the concept of a shmable, and the notion of a strable, and the idea of a lable.<sup>3</sup>

When not being so perfectly provincial intellectually as to be almost outrageously picayune thinkers, then - continuing to make the fashionable assumptions this section's featuring - we'll fully acknowledge this next point, an idea that's very central to the present section's main line of argumentation: As concerns anything of any great philosophical importance, (almost all) the concepts expressed by our short and

convenient expressions aren't superior to each of very many *other* concepts that aren't so conveniently expressed, that is, to each of very many *inconvenient* ideas.

(That may well be true even while this might also be true: There are very many *still other* inconvenient ideas that, as concerns at least some matters of great philosophical import, are inferior to (almost all) our convenient ideas – and also worse than very many inconvenient ideas, as well. Thus, the concept of an *elementary particle* (just) might be superior, in a philosophically significant way, to the concept of an *elementary particle that's more than seven kilometers from any pharmacy.*)

Right along with the point that none of our convenient concepts (or almost none) will be importantly superior to each of very many inconvenient notions, there'll be this companionable idea: There's *nothing any more realistic* about, or any more fundamental in, the *sorts* of things satisfying the *more convenient concepts* than there is to (very many of) the *quite different sorts* of things that, not satisfying those readily expressed ideas at all, satisfy, instead, only one or another quite *inconvenient* conception, or notion, or idea. And, right along with *that* point, there'll be this *still further* thought: There's nothing any more realistic about the *things of* the first (“more *convenient*”) sorts than there is to the *very different things* of the second (“more *inconvenient*”) sorts – still continuing to make all the fashionable assumptions that our present section's featuring.

When we look at some specific instances of the general remarks just made, we'll quickly confront considerations, or ideas, which are pretty surprising thoughts - for quite a few of us, at least, including me. As well as being surprising, they might be somewhat disturbing, too. In fairly short order, I'll now try to explain what that may mean.

As we observed in earlier sections, the persistence conditions for a paradigmatic piece of copper are, in *one* way, stricter than the persistence conditions for a typical copper sculpture – even while, in *another, quite different* way, it's the *latter's* persistence conditions that are stricter than those for the *former* (sort of) item: As far as *Bisection* goes, our piece of copper's (concept's) persistence conditions are *stricter* than those for (the concept of) our copper sculpture. Much the same thing: The concept of a piece of copper is so strict, in *this* particular way – call it *the Bisectional way* - that “it *won't allow*” something falling under it – that is, a piece of copper – to survive immediately (a process, or an event, or a whatnot of) Bisection. At the same time, the concept of a copper sculpture is, in *this same* way – this Bisectional way – such a very lenient notion that “it *will allow*” something falling under *it* – that is, a copper sculpture – to survive immediately (a process, or an event, or a whatnot of) Bisection.

As we also observed in earlier sections, the persistence conditions for a paradigmatic piece of copper are, in *another* way, *more lenient* than the persistence conditions for a typical copper sculpture – even while, in *that other* way, it's the *latter's* persistence conditions – the conditions for (the concept of) a copper sculpture - that are stricter than those for the *former* item, for (the concept of) a piece of copper: As far as *Extrusion* goes, our piece of copper's (concept's) persistence conditions *aren't stricter* than those for (the concept of) our copper sculpture – indeed, they're *laxer* persistence conditions. Much the same thing: The concept of a piece of copper is so very lax, in this *other* particular way – call it *the Extrusional way* - that “it *will allow*” something falling under it – that is, a piece of copper – to survive immediately (a process, or an event, or a whatnot of) Extrusion. At the same time, the concept of a copper sculpture is, in *this*

*particular other way* – this Extrusional way – such a very strict notion that “it *won’t* allow” something falling under *it* – that is, a copper sculpture – to survive immediately (a process, or an event, or a whatnot of) Extrusion.

For a graphic illustration of all that, we may represent the points just made by means of a standard rectangular table, with (horizontal) rows for one of the main points we’re considering, and with (vertical) columns for the other main point being considered. Quite as happy as it may be suggestive, the table I’ll display will have there be some “open slots” – each containing nothing more than a question mark – which slots we’ll soon be moved to contemplate:

	<b>Extrusion</b>	<b>Bisection</b>
<b>?</b>	Survives	Survives
<b>Piece of Copper</b>	Survives	Doesn’t Survive
<b>Copper Sculpture</b>	Doesn’t Survive	Survives
<b>?</b>	Doesn’t Survive	Doesn’t Survive

As this table makes evident to us, there are *two further* possibilities, in the conceptual territory we’re investigating, each closely related to, but each clearly distinct from, the two possibilities which, rightly enough, we associate with our two currently considered convenient concepts, the idea of a piece of copper and, markedly distinct from it, the equally convenient notion of a copper sculpture.

Of course, each of the four possibilities in play – and each of the concepts most directly associated with them - may have its own tiny table, with just its own single row, and with the same salient two columns. This little table will show how just a single

notion fares – or how things fare that are each *of* the single sort correlative with the notion - with respect to just Extrusion and Bisection. Well, for (our concept of) a *piece* of copper, we'll have this little table:

	<b>Extrusion</b>	<b>Bisection</b>
<b>Piece of Copper</b>	Survives	Doesn't Survive

And, for (our concept of) a copper *sculpture*, we'll have this very different, and even quite opposite, little table:

	<b>Extrusion</b>	<b>Bisection</b>
<b>Copper Sculpture</b>	Doesn't Survive	Survives

But, those two aren't all the tiny tables we should consider. Nor, then, are those two notions - the concept of a copper sculpture and the concept of a piece of copper – the only concepts that we should consider. Quite as we've considered those two convenient conceptions, we'll consider the other two notions represented in our table, just above.

One of them will, of course, be represented by this tiny table:

	<b>Extrusion</b>	<b>Bisection</b>
<b>?</b>	Survives	Survives

And the other inconvenient concept will be represented by this other tiny table:

	<b>Extrusion</b>	<b>Bisection</b>
<b>?</b>	Doesn't Survive	Doesn't Survive

What may we say, at all instructively, about the inconvenient notions represented by these last two tiny tables? Let's start with the topmost of the two.

With the topmost tiny tables, we're (partially) representing a concept that, while it's rather like the notion of a *piece of copper*, in certain ways, yet it differs from that convenient concept in certain other ways. Here are two ways in which this newly highlighted concept is the same as our concept of a piece of copper: For one thing, it's a concept satisfied only by copper concreta. And, for another, it's satisfied by concrete individuals that *survive Extrusion*. In this other way, however, this inconvenient idea is very unlike the concept of a piece of copper: Whereas concreta satisfying that *convenient* conception (that is, *pieces* of copper, of course) *can't survive* (a process of) *Bisection*, the concrete particulars satisfying this *unfamiliar* notion *can* survive Bisection - so very lax an idea, in this regard, is this unfamiliar conception.

Even as all that's quite surely the case, what's next upcoming will also be the case, as well: Our aforesaid inconvenient notion, represented by that same topmost table, is a concept that, even while it's rather like our *other saliently convenient* concept, the notion of a *copper sculpture*, in some ways, yet it still differs from *that* convenient concept in some other ways. Here are two ways in which this newly highlighted concept is the same as our concept of a copper sculpture: For one thing, it's a concept satisfied only by copper concreta. And, for another, it's satisfied by concrete individuals that *survive Bisection*. In this other way, however, this inconvenient idea is very unlike the concept of a copper sculpture: Whereas concreta satisfying our *currently considered convenient* conception (that is, *copper sculptures*, of course) *can't survive Extrusion*, the

concrete particulars satisfying the *presently pondered unfamiliar* notion *can* survive Extrusion - so very lax an idea, in *this regard, too*, is this unfamiliar conception.

Summing up our observations, we may say this: At least as far as our two by-now familiar processes go, the processes of Extrusion and Bisection, this newfound notion is a concept whose persistence conditions are laxer than both those of (our concept of) a piece of copper and also those of (our concept of) a copper sculpture. Let us call this (currently and humanly) inconvenient concept, perhaps indicated here only very partially and quite vaguely, the concept of a copper *laxo*.

We now turn to the second, and the bottommost, of our two tiny tables.

Now, we'll call attention to a very different concept for copper concreta. Of course, it's a conception whose persistence conditions are stricter than those of the other three notions we're discussing. Even as *this* inconvenient concept will have persistence conditions stricter than those of our conception of a piece of copper and those of our idea of a copper sculpture, so its persistence conditions will be *very much stricter* than those for our just previously noted inconvenient idea, the concept of a copper *laxo*. Let's have this second inconvenient notion be the concept of a copper *stricto*.

As I've been suggesting, none of the four concepts lately in play is better suited, than is any of the others, for conceiving how things are, fundamentally, with concrete reality. In line with that, and as I'll now also suggest, the kind *pieces of copper* is on a par, ontologically, with the kind *copper laxos*, which is on a par, ontologically, with the kind *copper sculptures*, which is on a par, ontologically, with the kind *copper strictos*. And, just as it is with these kinds, so it is with individuals of the four kinds. Just so, a piece of copper is no more fundamental than is a copper *laxo*, or than is a copper *stricto*.

That said, and at all events, each of these following four conditional sentences will express a most salient thought that's on a par with those expressed by each of the three others, at least insofar as questions of analytical inanity are concerned:

If something is a *piece of copper*, then, while it can survive a process of Extrusion, it can't survive a process of Bisection.

If something is a *copper sculpture*, then, while it can survive a process of Bisection, it can't survive a process of Extrusion.

If something is a *copper laxo*, then, just as easily as it can survive a process of Bisection, it can also survive a process of Extrusion; it's involvement in *either* (sort of) process *will* allow it to continue to exist.

If something is a *copper stricto*, then, no more can it survive a process of Bisection than it can survive a process of Extrusion; it's involvement in *either* (sort of) process *won't* allow it to continue to exist.

As I think you'll agree, the four thoughts expressed by these four sentences are, all of them, analytically concretely inane propositions.

Now, even if they might not be just so many explicitly conditional propositions, the four thoughts expressed by these next four sentences will also be just so many analytically inane ideas:

*Pieces of copper* can survive a process of Extrusion; but they can't survive a process of Bisection.

*Copper sculptures* can survive a process of Bisection, but they can't survive a process of Extrusion.

*Copper laxos* can just as easily survive a process of Bisection as they can survive a process of Extrusion; their involvement in *either* (sort of) process *will* have them continue to exist.

*Copper strictos* can no more survive a process of Bisection than they can survive a process of Extrusion; *their* involvement in *either* (sort of) process *won't* have them continue to exist.

With the first of these four sentences, the full thought that's conveyed, however obliquely, might be something like this conditional idea: If there really *are* such concrete things as *pieces of copper*, then pieces of copper can survive Extrusion, but not Bisection.

However that may those four thoughts concern involve little more than just some pretty precious semantic matters. As seekers of grandly general concretely substantial ideas, it matters little to us how things play out with any such precious questions. For us, the main points here are, rather, just these: There's no more concrete substance to the thoughts expressed by the *first* two sentences, though each of them is a *convenient and ordinary* idea, than there is to the thoughts expressed by the *last* two sentences, though each of *them* is an *inconvenient* idea, quite *extraordinary* for any of us humans even to consider. Quite fully and equally, all four thoughts are analytically inane ideas

### **3. Pieces, Lumps and Hunks: A Problematic *Plethora* of Persisting Particulars?**

In several ways, the previous section can be regarded, quite fairly enough, as little more than a mere warm-up for lots of happily similar work. Trying to provide some illumination by doing so, we'll now undertake a fair bit of that work.

I just said there were several ways in which the previous section's work may be little more than a mere warm-up. One of the most salient of those ways is, I imagine, just this: Rather than our considering only two sorts of process, each of which may involve our candidate material persistents – Extrusion and Bisection, as it happened – we may consider enormously many sorts of such relevantly involving processes, each quite notably different from all the rest. Often, each will differ from the others about as radically as Extrusion differs from Bisection. Stopping far short of beating a dead horse, in the present section, I'll discuss just two more of these impressively different (sorts of) process. On her own, I feel sure, the astute reader can then come up with many more.

To make good use of these two newly contemplated processes, I'll attempt to provide a reasoned discussion of how they may variously bear on questions of persistence, and on questions of cessation, for a previously unnoticed wide variety of presumably real material entities. In this attempt, I'll first consider a certain sort of *accumulation* process.

There's a certain sort of *very gradual* accumulation process that will have a piece of copper gradually grow very greatly- though all the growth will always occur along only a single line, so to say, or only along one of the piece's three mutually perpendicular spatially linear dimensions. I'll call this sort of accumulative lengthening process *Wiroccumulation* – coining a term with roots both in the common word “wire” and also in the common word “accumulation”. This new word applies only to such very gradual linear accumulations as in, something with the shape of a long wire.)

As should appear evident, Wiroccumulation is radically different from both Extrusion and Bisection, even though its result may be the same as Extrusion. So, now we'll have *three* processes to consider, each notably different from both of the others.

Now that we've these three distinct sorts of process in play, Extrusion, Bisection and also Wiroccumulation, it will be useful for us to construct a new table, expanding on the largest table we've already displayed. Whereas that table had only two columns, one for Extrusion and one for Bisection, this new table will have three columns, as it features, as well, a column for Wiroccumulation. Here it is, hopefully set out all on the same page:

	<b>Wiroccumulation</b>	<b>Extrusion</b>	<b>Bisection</b>
<b>Superlaxo</b>	Survives	Survives	Survives
<b>Piece of Copper a.k.a. Semilaxo Aby</b>	Survives	Survives	Doesn't Survive
<b>Semistricto Baby</b>	Survives	Doesn't Survive	Survives
<b>Semilaxo Aby</b>	Survives	Doesn't Survive	Doesn't Survive
<b>Semilaxo Baby</b>	Doesn't Survive	Survives	Survives
<b>Semistricto Aby</b>	Doesn't Survive	Survives	Doesn't Survive
<b>Copper Sculpture a.k.a. Semistricto Baby</b>	Doesn't Survive	Doesn't Survive	Survives
<b>Superstricto</b>	Doesn't Survive	Doesn't Survive	Doesn't Survive

As you'll be quick to observe, this new table is six times the size of the previous section's largest table. While that one had four cells – or four intersections of rows and columns – this one has twenty-four cells. Perhaps more important, while that one had just four rows, each representing a relevantly distinct possibility, this table has eight rows, representing twice as many distinct possibilities.

(Of course, this will generalize: Each time we add a newly distinct sort of processes to those we're considering, we'll have twice as many relevantly reckoned possibilities. So, quite as the number of rows in our table for *three* distinct sorts of processes is eight – that is, it's two (survives vs. doesn't survive) to the *third* power – so the number of rows in a table for, say, *five* distinct sorts of processes will be two to the *fifth* power – or thirty-two. So, with five distinct processes, there'll be 32 properly pondered possibilities.)

Taking our cues from this new table, we may say some agreeable things about both our copper sculpture, Untitled #42, and also our piece of copper, Peter Copyfield.

By reading things right off our table, we may say three quite simple things about each of these two concreta. For instance, about our piece of copper, we may say that it will survive a process of Wiroccumulation (unlike a typical copper sculpture, which *won't* survive that.) And, about our typical copper sculpture, we may say that it will survive a process of Bisection (unlike a piece of copper, which won't survive *that*.)

As you'll notice easily, when looking along our new table's left-hand side, I've already categorized (the sort) pieces of copper, as far as the three (sorts of) considered processes go: pieces of copper are (at least among the) persisting copper concreta that survive both Wiroccumulation and Extrusion, but not Bisection.

Well, now, what about *lumps* of copper, which might not only be different from copper sculptures, but which might also differ from pieces of copper? In (the admittedly quite limited) terms of our table, how shall *they* be categorized?

First off, there's this to observe: For all I can readily say, while it might be true that any lump of copper is a piece of copper, it's *not* true, I can safely say, that all pieces of copper are lumps of copper. For one thing, there's this point about *shape*: Many pieces of copper are each shaped in a way that's very far from being lumpy, and from being lumplike, and from anything even remotely like that. So, for its having such an inappropriate shape, each of *those* pieces *won't be a lump* of copper. Here's an example of that, by now as familiar as its obviously apt: Where there's a certain long thin copper wire, there may be a single continuous piece of copper, surrounded by nothing more than air, or even space that's utterly empty. Occupying just exactly the space that the wire itself occupies, there will be a single *piece* of copper. But, there won't be, right then and there, any *lump* of copper, at all.

So, right off the bat, we know that (the concept of) a lump of copper has some fairly strict persistence conditions; for one thing, copper lumps can't survive Wiroccumulation. What's more, and as just a little more reasoning shows, these lumps also can't survive Extrusion. And, what's yet more still, similar reasoning shows they can't survive Bisection, either. So, as far as exposure to these three sorts of process goes - Bisection, Extrusion, and Wiroccumulation - a *lump* of copper is a copper *Superstricto*. To illustrate how we'll use our tables, I'll walk you through that, step by leisurely step.

First, when it's perfectly evenly *Bisected*, a single lump of copper will give way to two descendant pieces of copper – usually both of them also copper lumps, but

sometimes not so. Anyhow, and in the bargain, the original lump will then cease to exist (whether or not it may exist still later).

Second, when it's put through a wire-producing *Extruder*, a lump of copper will have its shape changed in just such a way that the lump itself will give way to something else, a thing with a shape that's too long-and-thin to be anything even remotely like lumpy, let alone nothing less than a proper lump.

And, third, when it's put through a very gradual *Wiroccumulation*, as we've been calling our newly considered sort of process, our lump of copper will then cease to exist. As with its undergoing an Extrusion, with its undergoing a Wiroccumulation, as well, the original lump will give way to something else, a thing with a shape that's too long-and-thin to be anything even remotely like lumpy.

Irrelevant our main issues, the chief difference between those two processes – between Extrusion and Wiroccumulation - is, perhaps, just this: With Extrusion, the original lump's matter may end up serving wholly to constitute (all of) the whole resulting long-thin object - – or, just possibly, perhaps, (all of) each of several wiry-shaped spatially coincident objects. With Wiroccumulation, by contrast, the original lump's matter will be only some of the matter – and quite a small proportion of it, at that – which, and the end of the process, serves to compose the resulting wiry-shaped material entity – or, just possibly, perhaps, (all of) each of several wiry-shaped spatially coincident entities.

At all events, and quite as I've said, a lump of copper should be reckoned a *copper superstricto*, where the strictness suggested by that label is meant to extend as far as what's dictated by the information represented in our table.

Well, now, what about *hunks* of copper? In terms of our eight-rowed table, how will they be categorized? For many people, even if not for me, it may be very hard to notice any difference between *lumps of copper* and, on what just might be another hand, *hunks* of copper. Why should we think that there's a difference here, between the lumps and the hunks? In just a few moments, I'll explain.

Right before doing that, I'll prepare the way for the explanation: Even as many folks just don't take the time, or the trouble, to notice any difference between lumps of copper and pieces of copper, they also don't bother to notice the difference between hunks of copper and pieces of that stuff. But, even as lumps may be contrasted with pieces, so there's also a nice difference, too, between *hunks* of copper and, on the other side, *pieces* of that metallic material. For one thing, though all hunks of copper are pieces of copper – just as all lumps of copper are – not all pieces of copper are hunks of copper – no more than all such pieces are lumps of copper. As with the lumps of the stuff, considerations of shape are enough to show a significant difference here, between hunks of copper and pieces of copper: Pieces of copper that are clearly too wiry-shaped to be properly reckoned lumps, to rehearse a case that's already been useful, well, they'll also be clearly too wiry-shaped - too long-and-thin, so to put it slightly differently - to be properly reckoned hunks.

Here are more ways in which hunks and lumps are similar: Even as copper lumps are superstrictos, in terms of the possibilities our latest table covers, so should copper hunks also be reckoned superstrictos, as the reader may readily verify: Neither the lumps nor the hunks will survive Wiroccumulation, or Extrusion, or Bisection.

With all that being so, it's not very puzzling, at all, that many folks should fail to see any difference between lumps of copper and hunks of the stuff. But, for us who expertly traffic in analytical inanity, it's not terribly hard, really, to observe a clear difference here, albeit one that's clearly inane.

As promised, I'll now explain: Consider the rarely-if-ever-previously pondered process of *Rectoration*: This (sort of) process may be carried out in an accumulative way – reminiscent of Wiroccumulation – and, equally, it may be carried out in a purely shape-transformative way - reminiscent of Extrusion. When this process is imposed on a lumpy-shaped piece of copper – say, a piece that's shaped, roughly speaking, rather as an ovoid is shaped – it will then also be imposed, in the bargain, on both a lump of copper and also on a hunk of copper, each occupying just precisely all the space that's occupied by the other, and each composed of just the very same copper as serves to constitute the other. Anyhow, in the *shape-transformation version* of Rectoration, here's what happens: Pressure is applied to our considered (piece of) copper in just such a way as to gradually transform the (piece of) copper shapewise, so that it goes *from* being shaped ovoidally *to* being shaped precisely as befits a *typical rectangular solid*, the Rectoration culminating in a piece of copper with eight nicely rectilinear pointy corners. As we might have it, when a proper Rectoration's done, there'll be a solidly rectangular piece of copper that's no more than twice as long as it's wide, and no more than twice as wide as it's high. All that is, of course, just *stipulated*, as being involved in what's a *Rectoration*.

In this purely shape-transformative process of Rectoration, the very same copper that originally composes both a lump of the stuff and also a hunk of the material comes to compose *only a hunk* of the cuprous metal, *without its then* composing any lump at all.

For, when some copper is in just precisely the same shape as a typical rectangular solid, then, while the copper *will* constitute such an (aptly freestanding) piece of copper as may be properly reckoned a *hunk* of the stuff, that same copper then *won't* constitute any *lump* of the material. What's now before us is far too boxy, or far too rectilinear, to be any proper *lump* of copper, what with all those (six) flat sides, and all those (eight) straight edges, and all those (eight) right-angled corners.

Just so, we experts in inanity have little trouble distinguishing between genuine *lumps* of copper and, on the other hand, true *hunks* of copper. And, we may give some expression of our enviable ability, I suppose, by giving voice, so to say, to such aptly opposite inanities as this pair of concretely empty ideas:

*Hunks* of copper *can* survive a process of *Rectoration* – *even though* they can't survive *Wiroccumulation*, and *Extrusion*, and *Bisection*.

*Lumps* of copper *can't* survive a process of *Rectoration* – *just as* they can't survive *Wiroccumulation*, and *Extrusion*, and *Bisection*.

When they're used as mainstream philosophers typically employ them, sentences like these serve to express only just so many analytically inane propositions.

With only just such a use supplied for them, these sentences will hold only very limited interest for folks with any great thirst for *concretely substantial* propositions. Almost all of them innocent of recent philosophy, they'll have, already in place, an aptly apathetic attitude toward the philosophical literature on the (putative) persistence conditions of material individuals, and toward ever so much other recent philosophical literature, similarly replete with little more than just so many analytically inane ideas.

**4. Is There A Problematic Plethora of *Extraordinary* Persisting Particulars?**

A few readers may continue to think such sentences as I’ve just displayed express some philosophically profound propositions, whether true or whether not quite true. How might I help these stubbornly habitual souls to abandon their intellectual illusions?

Here’s one way for me to try to be helpful: In the previous section, I presented a twenty-four-celled table. Now, consider just the *bottom two rows* of that table. Not making you look back, at anything, I’ll display that now<sup>4</sup>:

	<b>Wiroccumulation</b>	<b>Extrusion</b>	<b>Bisection</b>
<b>Copper Sculpture a.k.a. Semistricto Baby</b>	Doesn’t Survive	Doesn’t Survive	Survives
<b>Superstricto</b>	Doesn’t Survive	Doesn’t Survive	Doesn’t Survive

As I’ll remind you, the superstrictos represented include both lumps of copper and also hunks of copper. So, in the bottom leftmost box, there might be placed all this verbiage:

**Superstricto a.k.a. Lump of Copper a.k.a. Hunk of Copper.**

Right now, it will be helpful to expand on just the lower row, so as to obtain:

	<b>Wiroccumulation</b>	<b>Extrusion</b>	<b>Bisection</b>	<b>Rectoration</b>
<b>Semisuperstricto a.k.a. Hunk of Copper</b>	Doesn’t Survive	Doesn’t Survive	Doesn’t Survive	Survives
<b>Superduperstricto a.k.a. Lump of Copper</b>	Doesn’t Survive	Doesn’t Survive	Doesn’t Survive	Doesn’t Survive

At all events, that's a nicely handy little table, I think, comprising the bottom two rows of a currently most relevant sixteen-rowed table, a table so big that considerations of pagination move me *not* to present in *full*.

Having expanded on the lower row of the six-celled table lately displayed, let's expand on that table's upper row, now expanding on this tiny table:

	<b>Wiroccumulation</b>	<b>Extrusion</b>	<b>Bisection</b>
<b>Copper Sculpture</b> <b>a.k.a.</b> <b>Semistricto Baby</b>	Doesn't Survive	Doesn't Survive	Survives

By doing that, we obtain this newly expansive table:

	<b>Wiroccumulation</b>	<b>Extrusion</b>	<b>Bisection</b>	<b>Rectoration</b>
<b>Nutrello Baby</b>	Doesn't Survive	Doesn't Survive	Survives	Survives
<b>Semisuperstricto</b> <b>Baby</b> <b>a.k.a.</b> <b>Copper Sculpture</b>	Doesn't Survive	Doesn't Survive	Survives	Doesn't Survive

Let's compare what we before observed before, with our just previous expansion, with what we may now observe, with this latest two-row table.

Well, as far as certain persistence conditions go – which is just about as far as any of our tables go – the just *previous* two-row display represented how things stand *with two (different) ordinary* (sorts of) things, one of them being *lumps* of copper and (having *somewhat laxer* persistence conditions than do the cuprous lumps) the other being *hunks*

of copper. Quite obviously, with *that* two-row table, *both rows* are rows for a certain (sort of) *ordinary* things, both the row for the *lumps* and the row for the *hunks*.

Things aren't so ordinarily happy, as best I can tell, with all that's represented in our latest two-row table.

To be sure, *one* of this table's two rows *is* a row that represents a certain *ordinary* (sort of) thing – the sort *copper sculptures* (and, at a remove, *things of* just that ordinary sort). This is the row, of course, that represents the sort (of things) that I've barbarically bid us call (the sort) *Semisuperstricto Babies*. So, as I've laid it down, copper sculptures will be copper semisuperstricto babies. (Or, anticipating things in a way that will let us acknowledge still further differentiating processes (and still larger tables), copper sculptures will be a *among* the copper semisuperstricto babies.)

But, now, what will we think of the other row in this little table, the table's upper row? What sort of material things are represented there? As far as *I can tell* – which might possibly be not very far, at all, I'll admit – there *isn't any conveniently short expression* of English - or of any other natural language, I'm guessing - that's a word for *concreta* which *will always survive both* Rectoration and Bisection, but which *won't ever survive either* Wiroccumulation or Extrusion. Now, if that's so, then, in everyday English, at least, there's *no* short convenient expression, for the (sort of) persisting *concreta* that I've bid us call *nutrello babies*.

Just for the meanwhile, let's suppose that this guess of mine is correct: No short and convenient English expression is a term for (a sort of) enduring material objects whose persistence conditions are those of our *nutrello babies*: No very readily expressed sort of material things are *conceptually invulnerable* to both Rectoration and Bisection,

even while they're *conceptually vulnerable* to both Extrusion and Wiroccumulation. (It's not very important, really, that this particular guess of mine be correct. For one thing, and as I'll soon make clear, there are plenty of points each relevantly paralleling the thought just pondered, very many of which will be correct, in *any* case, *whether or not* there's an ordinarily short term for our nutrello babies. But, that's for then, and this is now. So, right now, it's on with the present order of business.)

Does anybody believe, really, that there's anything *more realistic* about the convenient idea of a *hunk* of copper, or about the ordinary notion of a *lump* of copper, than what's present with, instead, the quite *inconvenient* concept of a copper *nutrello baby*? Does anyone think that, say, even as the *first three* of these four concepts *are all well-suited* for thinking about the true nature of certain persisting material individuals, the last one *isn't* so well suited? Well, human diversity being quite enormous, I suppose there may be *some* very few folks who think such a thing – or who'll think it should ever they read this writing of mine. But, even so, there's precious little to favor such a peculiarly parochial, prejudicial and provincial idea.

Moments ago, I said that it doesn't matter much, for my present purposes, whether or not there's a short convenient expression, in English, for our newly named nutrello babies. Either way, there'll be *plenty of other* quite inconvenient and extraordinary concepts *any one of which* will serve those purposes quite well

There are several ways to convince ourselves that this must be so. Here's one that's now easy to present: Consider just the *top* four rows, or just the *top* half, of our by-now-pretty-familiar twenty-four-celled table. Being about as reader-friendly as I can manage, I'll present that again, right now, detached from that table's bottom half:

	<b>Wiroccumulation</b>	<b>Extrusion</b>	<b>Bisection</b>
<b>Superlaxo</b>	Survives	Survives	Survives
<b>Piece of Copper a.k.a. Semilaxo Aby</b>	Survives	Survives	Doesn't Survive
<b>Semilaxo Baby</b>	Survives	Doesn't Survive	Survives
<b>Semistricto Aby</b>	Survives	Doesn't Survive	Doesn't Survive

Please notice that, among the four rows currently considered, *only one* of them, it appears, represents the persistence conditions for *any ordinary* (sort of) persisting material particular. It's the second row from the top, of course, wherein a *piece of copper's* persistence conditions are (partially) represented. What about the *other three* rows? Do *any of them* present the persistence conditions of a truly ordinary and relevantly convenient (sort of) material persistent? I don't think so. And, while I may well be wrong about one of the three, or just possibly, perhaps, even two of the unpromising candidates, it's very unlikely that I'm *wrong about all three* of them.

Unless I'm very badly mistaken, then, it's pretty straightforward, and it's even quite easy, to rightly convince ourselves that (providing that there really are very many sorts of persisting material objects, in the first place) quite a few sorts of persisting physical concreta *won't be any ordinary* (sort of) persisting material things. And, with

just a very little more work, in the same general direction, we can rightly become enormously confident, I think, that this must be so.

The key thought here is for us to consider *very many more sorts of processes*, each very different from the others, and each also quite different, of course, from the four sorts already considered. Like those considered already, each will be a (sort of) process that can deeply involve, in one or another transformative manner, the likes of our Untitled #42 and, quite equally, of course, the likes of our Peter Copyfield. In terms of our tabular constructions, each sort of newly named process will provide yet another column, for an ever-larger sequence of aptly instructive tables. And, in line with that, there'll be added two more rows, in each successive table – one row for the (sorts of) things that *do* survive this newfound process, the other for the (sorts of) things that *don't* survive it.

It's easy to come up with a very great many of these complementary processes. Each notably different from all four of the processes we've already highlighted, here are four further processes, each pretty nicely suggested by the name I'm giving it, and each notably different, as well, from the other three now newly highlighted processes: Trisection, Sphericalation, Meltation, and Donutization. With them now added, we've now highlighted eight involving processes. Well now, with just these eight nicely distinct processes each heading a different column, we'll have a table representing one thousand-twenty-four – yep, 1024 - different sorts of enduring material particulars – providing, of course, that there really *are* material concreta of *any* of these sorts, including the pieces of copper, and the hunks and the lumps. While it's possible that there are (short) convenient English expressions for a few hundred of these sorts, it's nearly certain that there aren't *convenient* concepts for *most* of them, let alone *all*.

Of course, there's no earthly reason for us to stop at just eight saliently different sorts of processes. Indeed, it's little more than child's play to articulate, plenty well enough, transformatively involving processes of many more mutually quite different sorts. Without beating a dead horse into horseburger, however, we should, instead, agree on the central points of this section, and begin another section's discussion.

### **5. *Continuous Matter and Material Objects of Ordinary Kinds***

In certain possible worlds, there's matter that's perfectly continuous. With a lump of matter of that sort, the lump's constituting matter isn't parceled in discrete atoms, each spatially distant from the others, with the lump then comprising lots of materially empty space, too. Nor will the matter even come discretely quantized in any way at all (not even within such perfectly fitted quanta of matter as are each wholly adjacent to others).

As may also happen, in certain past Eons of this actual world, each occurring, perhaps, long before the much-mentioned Big Bang, our own world's matter was perfectly continuous matter – maybe all of it was or, maybe, just some of it was. Come to think of it, for all anyone *really knows*, even in this present Eon, presumed to be about 15 billions of years old, all the matter is just such perfectly continuous stuff.

Whether or not our actual world ever contains any matter that's truly continuous, we may gain a philosophically useful perspective by contemplating what may happen in situations replete with perfectly continuous stuff.

To articulate what motivates that remark, I should say a good deal more about what I mean, with my present use of “continuous matter.” Providing just a partial articulation, here is some of that: Whenever continuous matter is malleable, then the

continuous stuff is malleable in a way that is infinitely gradual. Thus, when the matter is put through a shape-transformative process – as with its going from (its constituting) a sphere to (its constituting) a cube, the matter will be progressively shaped in a (continuous and happily ordered) infinity of ways, progressing perfectly gradually from being shaped spherically to being shaped cubically.

(With material objects composed entirely of just such perfectly continuous matter, there will be material entities that don't have any substantial parts, components, or constituents. Quite commonly, and maybe even universally, these “materially continuous partless” individuals have no real constituents. [As David Lewis might say, these material particulars are wholly composed of (material) *gunk*.<sup>5</sup>] Of course, with that being so, none of their powers can derive from powers of their constituents. Indeed, at least for the most part, we should take it that, with such materially continuous (freestanding) material concreta, all of their powers, or dispositions, or propensities will be *physically nonderivative* propensities, dispositions, or powers. At least in *that* sense, they'll all be *physically fundamental* powers.)

Now, one might say that, logically, or *conceptually*, the (materially continuous) *matter* that constitutes a (materially continuous) physical object is *more fundamental than* the physical *object* the matter constitutes. Well, if we should take that line, then we might say, as well, that the propensities of a material object *derive logically*, or they *derive conceptually*, from the relevantly parallel powers of its constituting matter. In such an event, a partless materially continuous object that's perfectly malleable, for example, can be said to be so malleable *because* (conceptually) it's composed entirely of perfectly malleable matter.

In the paragraphs just proceeding, we've presented only just so many analytically inane propositions. Very possibly, those inanities are all quite correct inane propositions. At all events, and whether or not *they're* correct, I'm pretty sure this *next inane* idea is a *perfectly correct* inanity: Even if the propensities of a partless materially continuous physical object should *conceptually derive* from the propensities of its constituting *matter*, it *won't* be true that the propensities of that material thing *physically derive* from powers of material particulars serving to constitute the thing. This must be so for the simplest of reasons: There *aren't* any such constituting particulars.

By contemplating some nicely continuous material situations, we may be brought to notice certain interesting infinities of persisting concrete particulars: How might that happen? Let me explain.

Every *ordinary kind* of (presumably material) things is a kind whose members are items that semantically satisfy a short ordinary expression – often just a one-word expression – that's our *most standard name for that kind*. Thus it is, for example, that the ordinary kind *stone* has, as its members, just those things that each semantically satisfies the ordinary word “stone” – in the very central sense of that very common word. And, thus it is also, with, first, the ordinary (natural) kind “rosebush” and the common word “rosebush,” and with, second, the ordinary (artifactual) kind sculpture and the common word “sculpture,” and with, third, the fairly ordinary kinds *pieces of copper*, *lumps of copper* and *hunks of copper* and their fairly ordinary standard three-word names, “piece of copper,” “lump of copper” and “hunk of copper.” (With the intention of being happily helpful, I've just made a stipulation I think will prove happily useful.)

For each ordinary kind of material things, its most standard name is what I've often called a *vague discriminative term*, as with the terms "chair" and "table," the terms "rock" and "stone," the terms "twig" and "log," and the terms "knife," "fork" and "spoon."<sup>6</sup> Reminiscent of what's in previous sections, "lump" and "hunk" are also vague discriminative terms, as will be shown, perhaps *ad nauseum*, in some upcoming passages.

Here are a few related points: As the vague terms we're now considering each significantly differs from the others as regards meaning, so each of these vague discriminative terms expresses, quite directly, a distinctively different *vague discriminative concept*. So, just as the term "log" directly expresses the vague discriminative *concept of a log*, so the meaningfully quite different vague discriminative term "twig" just as directly expresses the distinctively different vague discriminative *concept of a twig*. And, even as the idea of a twig is quite different from the notion of a log, however interestingly the two "woody" concepts should be related, so twigs will belong to *one ordinary kind* of things while logs must then belong to another.

(The *vaguest of all* our ideas *aren't* any vague *discriminative* concepts. These very vaguest concepts, like the *concept of a thing*, and the concept of an *item*, are such utterly general thoughts that, insofar as they may be said to hold true of anything at all, they'll hold true of absolutely everything. As I now understanding the notion of an *item* – quite rightly enough, I think – *anything at all* may be an item. That being so, the concept of an item won't (even purport to) discriminate any things, or objects – or items – *from any other* things, or objects – or items. Ever so vague as this noted concept may be, this concept of an item, the noted notion *isn't* a vague *discriminative* notion.)

Unlike the utterly general concept of an item, the far less general concept of a twig does discriminate - at least it purports to discriminate – certain “positively included” items from all other items. Of course, the positively included items will be, in the case of the concept of a twig, all the twigs, “possible as well as actual,” and nothing else at all. Anything else will fall under the complementary concept, the concept of a *nontwig*.

Just as the concept of a twig purports to discriminate all the twigs from everything else, so the concept of a lump purports to discriminate all the lumps from everything else – from all the *nonlumps* - whereas, for its part, the concept of a *hunk* purports to discriminate all the *hunks* from everything else – from all the *nonhunks*.

In this chapter, we’ve invested a lot of thought, time and energy discussing lumps. At least for the most part, those discussions concerned presumptive lumps of copper, of course, though essentially the same points might have been made, very similarly, had we discussed some other sorts of presumptive lumps, as with lumps of tin, I suppose, or as with lumps of silver. Largely because we’ve already spent so much mental energy on the likes of lumps – and, less directly, on the concept of a lump – I’ll continue in that same vein, here and now, rather than moving to discuss, say, twigs, or the concept of a twig. But, I won’t confine myself to discussing lumps of copper. For a variety of reasons – including the rational wish to avoid dealing with certain inane Kripkean claims – I’ll not give a hoot, here and now, about what sort of matter comprises, or constitutes, the lumps I’ll be discussing. Instead, and being perfectly unspecific about the (sort of) stuff that’s lumped, so to say, I’ll be discussing lumps *of matter*. I won’t give a hoot about *what sort* of matter we consider, as long as it’s some perfectly *continuous* material.

Return to consider how it was that we imposed on a lump of copper four sorts of process, each being a kind of process apt for involving the lump under consideration: Wiroccumulation, Extrusion, Bisection and Rectoration. Not because it was constituted of copper, but simply because it was a *lump* of stuff, our considered lump survived *none of those four* (sorts of) processes. No lump of iron, or silver, or tin, would survive any of them, either. Nor would any lump of any perfectly continuous matter, comprising nothing like any atoms, or particles, at all.

For making this section's main points, this great vulnerability, common to all sorts of lumps, will help to instruct us. But, not all these lump-ending processes will prove to be very clearly instructive. For instance, many may think that, with the process of Bisection, a lump will cease persisting at a certain pretty obvious point, in the process – namely, the point where there is first complete severance of, and separation of, half the original lump's matter from (the other half of, or) the rest of the original lump's matter. Until there's an *empty surround* for each of two resulting half-size lumps, they may think, or until there's at least something very *strikingly like that*, perhaps the original lump will continue to exist. (Myself, I doubt that they'll be right here. Against them, and about that, my thought is this: When each of two “almost-halves,” so to say, is hanging to the other by just a “thread's worth of matter,” then, even while there'll still be the same original *piece* of matter, (the matter of) that piece won't then be in an aptly enough lumpy shape – apt enough for the matter to compose a lump. So, the matter that will then serve to constitute the same original piece won't constitute any lump of matter.)

To focus on an interesting infinity of spatially coincident material persistents, it's better to focus on a *more clearly gradual* lump-ending process than Bisection. One thing

good to examine is how a lump fares with respect to Wiroccumulation; another is how a lump fares with Rectoration. Let's first look at some Wiroccumulation.

### **6. Might There Be an *Infinite* Plethora of *Extraordinary* Material Persistents?**

Even as a lump of matter may be shaped very similarly to a typical baking potato, let's consider a lump that's shaped like that.

As we may usefully suppose, if only for the sake of potentially instructive argument, our considered lump is constituted of relevantly homogeneous, absolutely elemental, perfectly continuous matter: Each "region" of this lump is constituted of the very same sort of continuous elemental matter constituting any other region of the lump.

In a relevantly continuous process of Wiroccumulation, a thin "wafer" of this very same sort of matter may be seamlessly fused to one end of our somewhat elongated lump, along pretty much the whole of that end's surface. Or, so we may instructively suppose. This is done, we'll be supposing, in a way that results in the lump becoming a bit more elongated, or a bit longer – even while the lump doesn't become any wider, or any narrower, so to say; nor does the lump become any deeper, or any less deep; and so on, and so forth. Along a single salient linear dimension, all material additions serve only to elongate the lumpy object with which we'll begin our process. This is a process which may be repeated indefinitely many times, we're supposing, each time with a thin wafer of any chosen thickness – though, it's important for what's upcoming that the wafer added always should be quite thin. Of course, the matter that's to be involved in our continuous Wiroccumulation will be continuously sliceable stuff, and seamlessly fusible matter, so

that, once any additive step's been completed the resulting (longer) object is quite as perfectly continuous materially as was our original lump of the elemental stuff.

Let's suppose that we start with a lump that was about a foot wide, so to say, and that's also about a foot high, so to speak. Being somewhat asymmetric, however, the lump is about two feet long. Roughly speaking, the lump is about twice as long as it's wide, and twice as long as it's high. That completes our crude characterization of (the shape of) our contemplated lump of matter.

Now, suppose that the first waferlike bit of matter we fuse to one "end" of our lump is just precisely an inch thick, even while this disclike material concretum is, much like (typical perpendicular cross-sections of) the original lump itself, a full foot in diameter. Perhaps, when fusingly adding this inch-thick waferlike individual, we'll bend it a bit, so that it melds right onto, or into, the facing facet of our lump, which facet may well be somewhat curved, even as the whole lump itself will have a somewhat curvy, or curved, surface.

Further, suppose that the next step goes like this: Onto what we'll already obtained, and at its similarly facing facet, we fusingly add another waferlike object; while this one is also about a foot in diameter, it's only a *half* of an inch thick. And, at the *next* step, we add a wafer that's only *half as thick as that* – or, a *quarter* of an inch thick; while at the step after that one, we add a wafer that's *only half as thick as that last one* – that is, it's an eighth-of-an-inch thick wafer. So it will be that, in this halving fashion, this specific sort of Wiroccumulation process will continue, for as long as you should please. As it may (as well) go on forever, we may well say that this process proceeds in an *infinitely refined* manner.

After very many fusions of very many waferlike additions, we'll be considering not only a lot more nicely cohering matter, than what we had in just the original lump of stuff – but, as well, we'll be considering a cohesive free-standing material object, or at least one such physical thing, that's significantly longer than was, at the start, our original lump of matter. Indifferently, right now consider just *one* such freestanding object that's right there, an object that's descended from our lump and, suppose, that's as lumplike, or lumpish, as any that's now in our situation. (For all I know, with all the elongation that's gone on, that might not be very lumplike at all. Of, as far as I know, it may still be pretty lumplike. I've not really thought through this question, with any thoroughness, as it won't make any difference, at all, in the whole scheme of currently unfolding reasoning.) This considered somewhat elongated concrete particular will be, of course, still only about a foot wide, and only about a foot high. But, it will be significantly longer, as I said, than first was our original lump of matter.

Will it now be *too* long, with an object that's just *that* wide and just *that* high, for the material concretum to be a *lump* of matter? Maybe so, and maybe not; I'm not sure which. Anyhow, we needn't decide this particular issue.

To make things tough for myself, I'll assume that the series just considered *didn't* yield us an elongated concretum that's just too long to be rightly reckoned a lump. Rather, it's just a longish, skinny-looking lump, as far as lumps go. Anyhow, what that series yields is a lump. Well, in *that* case, we just move to consider *another* series, relevantly related to that first sequence, a series that will yield, whatever else it may also produce, a run of infinitely many objects each at least a bit more elongated than the longest (supposed) lump produced by the first series.

Here's one obvious way to make just that sort of move: As with the first series, this one begins with our adding an inch-wide wafer to our original lump – or to a perfect freestanding physical duplicate of it. But, with the second step, there's a departure from the ways of the first series. So, instead of our second step being one that has us add a half-of-an-inch thick wafer, we'll now have a second step where the wafer added is *two-thirds* of an inch thick. And, now, instead of multiplying each time by *one-half*, to get the fraction of an inch for the *next* wafer in the series, with each succeeding step – as with, say, one-half times one-half equaling one-quarter (of an inch) – here we'll multiply by *two-thirds*, with each succeeding step. So, in the *next* step, in *this* series, the wafer seamlessly added will be *two-thirds of two-thirds* of an inch thick – or, four-ninths of an inch thick. And, as a matter of course, in the next step after that, the wafer added will be *two thirds of (two thirds of two-thirds of)* an inch thick – or, the same thing two thirds of *four ninths* of an inch – or, again the very same thing, *eight twenty-sevenths* of an inch thick. Presumably, this will work, quite well, to yield us, eventually, a run of very many salient freestanding material objects, *each of them* clearly too long to be any proper lump.

But, let me make things very tough for myself now, very tough indeed. To that end, I'll suppose that, although it will get us many considerably longer would-be lumps than did the first series – many of them even very impressively more elongated – still and all, none will be so long that it won't be a lump. That's *not* because *no matter how long* a foot-high-and-foot-wide object it may well still be a lump. No, when there's a foot-high-and-foot-wide object that's a mile long, there'll be an object that, given its height and width, is far, far too long to be a lump. Rather, it just because, with nothing more robustly additive than our second series, it may be that we won't ever obtain an object

that's a mile long, or even an object with a length that's one-thousandth of a mile. So great, I blush to confess, is my mathematical ignorance and ineptness.

But, for a reason already at least glimpsed, that also won't matter at all, for the main line of our present piece of reasoning. For, if our second series doesn't take us beyond proper lumphood, in such a gradual fashion as may serve to promote puzzling plenitudes, then we'll just go the next step further in a direction we've obviously already traveled. Almost automatically, we'll move to use a certain somewhat larger fraction, this time larger than  $2/3$  as our multiplier, in yet another series, our third series: To obtain that new fraction, for this new series, we take the *previous one's denominator*, here the number 3, and we *make that the numerator of our new fraction*; and, then, we *add one to that very same number* – in the present instance, adding 1 to 3 - and we *make this slightly larger number the denominator of our new fraction*. In sum, we go from using two-thirds as our multiplier, as we did in our second series, to using three-quarters as our multiplier, as we'll do in our third series. Accordingly, in this newer series we add sequentially add wafers of these thicknesses: one inch, three-quarters of an inch, nine-sixteenths of an inch, and so on.

As I'm sure, you get what I'm going after. And, not only do you get the idea of what's to happen with our third series, but, as well, you get what will happen with our fourth, our fifth and, if it should be needed, with our seventy-third series, too. In short, by now you'll have gotten the big picture. And, having gotten that large point, you'll be happy to agree, I suspect, with all the *central* points I'll now be advancing.

With a suitably elongating wafer-adding series, there'll be a Wiroccumulation process (indeed, there'll be infinitely many distinct such processes, each of which is) fit

for yielding, after a certain number of its steps should occur – indeed, it’s actually not all that large a number – saliently free-standing matter that’s (so long and, so, given its fixed height and width, it’s) so shaped that it *won’t* then serve to compose any *lump* of matter.

That much, I trust, is now clear enough.

Well, with that much in hand, we’re fully prepared to ask a potentially quite instructive question, even if it should be a question that won’t ever get (from us, at least) any very good answer. Here’s the question: When is it, in our infinitely refined aptly elongating Wiroccumulation process, that *first* we go from a (definite) *lump* of matter to *something that’s not* a (definite) lump?

For our present discussion, it matters not what’s the best answer to this question, or even whether the question has any single most accurate answer. In short order, that’s something we’ll know full well.

At all events, for the sake of potentially instructive argumentation, we’ll suppose that, not only is there a definite answer to our question, but, what’s more, we may have in mind, very specifically, this definite answer. So, as we’re supposing, we’ll have clearly in mind which step it is that’s the very *first* step, in our (first most apt) serial process, when our constituting continuous matter (first) composes no lump at all; this is the first step, as we can supposedly see, when our longish (piece of) matter is just too elongated to compose, then and there, any (sufficiently freestanding) object that’s rightly reckoned any lump of matter, that is, any (material) lump.

For the sake of a simple exposition, let’s focus on just one such *barely nonlumpy* concrete individual – maybe easy to do, if our matter (conceptually) can’t serve to compose spatially coincident (free-standing) material objects, and maybe much harder to

do, in case that's not so, and our matter is serving compose many coincident entities. Hard or easy, either way, we succeed in considering just one material item – or, so it is that we helpfully suppose. And, let's characterize, in somewhat positive terms, this contemplated concretum, that's just a little too elongated to be a proper lump. Having certain advantageous connotations – along with some that may be somewhat disadvantageous - one way for us to characterize this contemplated item is to say that it's a (certain particular) *lump-and-a-delta*. Well, in having done that, we've just coined an apt term for a just-newly-recognized *kind of persisting material particulars*.

What are the persistence conditions for lump-and-a-deltas? Well, while we might not be able to say very much about that, which is usefully informative, there's at least a little something for us to say. What I've now in mind is this: The persistence conditions for our lump-and-a-delta will be, in at least *one* respect, just a *teensy bit less strict* than, or just a teensy bit *laxer* than, the p-conditions for a lump. And, just as we may see, in this way, how there may be many terribly *lumplike* material objects, each with persistence conditions just marginally laxer than those for a genuine lump, or just very slightly more lenient than a lump's p-conditions – so we may also see, in a perfectly parallel fashion, how there may be, just as well, many terribly *lump-and-a-delta-like* material objects, all with persistence conditions just marginally laxer than those for a genuine lump-and-a-delta, or just very slightly more lenient than a lump-and-a-delta's p-conditions.

As it may be, each of these fairly *lumplike* perfectly freestanding concreta will be, we'll say, a *lump-and-an-epsilon*, in an attempt to such slightly different persisting concreta in a pretty reader-friendly fashion. And, of course, just as we may see, in this

way, how there may be many terribly lump-and-a-delta-*like* material persistents, all with persistence conditions just very slightly laxer than those for a genuine lump-and-a-delta – so we may also see, in a perfectly parallel fashion, how there may be, just as well, many terribly lump-and-an-*epsilon-like* material objects all with persistence conditions just very slightly laxer than those for a genuine lump-and-an-epsilon. And, so it will go, without any limit to the sequence, even while the whole (infinite) series in focus may be a sequence that doesn't include anything as elongated as, say, a typical lump-and-a-delta-and-a-foot's-worth.

With all that being so, this next remark will also be true: With our current consideration of concreta, and without our supposing that an enormously gradual Wiroccumulation is actually effected on just the matter occupying a certain single free-standing lump-shaped spatial region, we might do well to suppose that we've been (partially) considering infinitely many spatially perfectly coincident concreta. And, at any given step in our Wiroccumulation, there'll be infinitely many spatially coincident concreta each of which has slightly different p-conditions from each of infinitely many others. At least one of these is a proper lump, of course. (And, I've tried to make our suppositions have it – for expository reasons - there may be *only one* lump in our sequence, too – that is, our series will feature *exactly one* lump; after we take even just one tiny elongating step in the series, none of the (spatially coincident) physical individuals, in our situation, will be a lump.)

Anyhow, at the very beginning of our process, (at least) one of the (supposedly) infinitely many concreta involved will be a lump; and, among all the (presumably

spatially coincident) objects in our Wiroccumulation process, it's just this lump that has, with *respect to this very process*, the strictest persistence conditions.

Going beyond the first item in our series, going beyond our lump, we very soon come to infinitely many spatially coincident *nonlump* material objects, at least one of which is a nice lump-and-a-delta. (If there should be many lump-and-a-deltas, in our sequential situation, right now consider just one of them – any one of them, it won't matter which.) Of course, this (solitarily considered) concretum belongs not to the kind *lumps*; rather, it belongs (only) to the kind *lump-and-a-deltas*. Now, among the (infinitely) many kinds of material objects exemplified in our (infinitely dense and continuous) Wiroccumulation series, I've highlighted only a few. And, among the few kinds I've thus brought to our attention, the kind lump-and-a-delta has, with respect to our Wiroccumulation process, the *second strictest* persistence conditions, second only to the kind lump. Still another of the kinds I've highlighted is the kind lump-and-an-epsilons; among the few kinds I've lately featured, this one has, with respect to our Wiroccumulation, the *third strictest* persistence conditions. And, so it goes.

By considering how a lump of perfectly continuous matter may be involved in a (certain specific sort of) process of Wiroccumulation, we've seen that, where, at first blush, there may appear to be only a single persisting material particular, and where, at a second blush, there may appear to be only finitely many spatially coincident physical individuals, there might really be, instead, an infinity of persisting material objects, each with persistence conditions that are, at least in certain respects, at least very slightly different from the p-conditions of all the others. (Of course, all this may be said, truly and correctly, only if it's correct to suppose that there *really are any* such persisting

material entities. But, as is quite commonly done, I'm perfectly willing to grant, in this chapter, that the supposition is correct. With that said, it's on with more business, even it might not be, right away, anything that's terribly novel.)

By considering how perfectly continuously a lump of perfectly continuous matter may be involved in a process of *Rectoration*, we may again demonstrate, in an instructively correlative way, the points we've just realized. For some instructive variety, I won't again consider an accumulation process. Rather, I'll present a Rectoration that, with always just the very same matter composing all the objects most saliently in focus, is a purely shape-transformative process. And, to spice things up yet a very little bit more, I'll suppose that the *kind* of (presumably) persisting material concretum that's originally involved, in our process of this Rectoration, will be the ordinary kind *spoon*. Along with that, the particular object we're to imagine will be a typically shaped freestanding spoon, maybe (something a lot like) a stereotypical teaspoon. As such, or as I'll additionally specify, while our considered concretum will be a spoon, it won't be a sculpture, and it won't be any hunk, or lump, or piece of matter.

As we'll be assuming, our nicely shaped spoon is very malleable, and not the least bit fragile. Or, maybe still better, its constituting matter is easily able, when placed under appropriate pressure, to continuously transform in shape, from how it's shaped initially – at the start of our Rectoration - to the shape of a prototypical rectangular solid, how our considered concretum's matter is to be shaped at our Rectoration's end.

As may have gone without saying, that will happen in a perfectly smooth and fully cohesive fashion, without any sort of abruptness at all, much less anything even remotely like any breaking, or tearing, or shattering, and so on.

Naturally enough, we may talk helpfully about *the first half* of the purely shape-transformative Rectoration, even if there should be nothing distinctively separating the end of that first half from the start of the Rectoration's second half. At the least, this talk may allow us an instructive intellectual device. Anyhow, when the process is halfway done, or when there's just the first half of the process, the matter that first constitutes a spoon has been halfway transformed, so far as its shape is concerned, toward being matter that constitutes a perfectly rectangular solid, and, at that point, not any spoon at all, of course. And, similarly, we may talk of the first half of *that* – which will be, of course, *the first quarter* of the Rectoration process; in which just *half of that* shapewise transformation occurs.

Speaking in that useful way, we may say - and, quite appropriately, it appears - that there are infinitely many “fractional parts” of our Rectoration process. For this is a process that, in a perfectly continuously manner, “takes some matter” that initially constitutes a spoon and “has the matter” – the very selfsame identical stuff – finally come to compose not any spoon at all, but, instead, only a brick-shaped entity, indeed, only a perfectly rectangular solid. (Or, it has the matter come to compose, finally, ever so many perfectly rectangular solids, possibly even an infinite number of them, each spatially coincident with all the others.)

Thus we may helpfully describe, in a certain quite obvious way, *the course of change* that our noted matter undergoes – *in the course of* its going from composing a spoon to its composing, eventually, a rectangular solid. With such an obviously helpful description, we'll say that this is an *infinitely divisible* course, which our Rectoration's perfectly continuous matter undergoes. Correlatively, we may say that this course is an

*infinitely refineable process* (or, what comes to the same, we may say that the course's most closely associated process is infinitely refineable.)

Now, consider just as much of our contemplated Rectoration as is needed to take us from having a spoon be present - or maybe some several spatially coincident spoons - to our having there be present, for the very first time in our process, no spoon at all. What we'll now be considering - perhaps among many other things - is a *very spoonlike* material thing - or maybe a plurality of them. Consider just one of these, at just this point in our process - possibly, it will be the only freestanding concrete particular our Rectoration's matter then constitutes. Well, at least for reasons of its shape, this considered material individual is *not quite* spoonlike *enough* to be a spoon.

For the sake of some reader-friendly reasoning, let's suppose (or pretend) that there's a first such barest failure at being a spoon. Anyhow, whether it's the very first failure or whether it's only just a "relatively extraordinarily early" bare miser, let's say that the *relevantly spoonish* object we'll now be considering is a *spoon-and-an-alpha*; where it's laid down that the two kinds, *spoons* and *spoon-and-and-alphas*, are mutually exclusive kinds, and, so, no spoon-and-an-alpha is (or can be) any spoon. Of course, with our bothering to go in for this labeling, we're out to express, very vividly and quite clearly, this perfectly pertinent point: Especially as concerns matters of shape, certain spoons are *very like* certain spoon-and-an-alphas (and, of course, vice versa). Still and all, the spoons and the spoon-and-an-alphas are, especially as regards matters of shape, *somewhat unlike* each other: When it's involved in a purely shape-transformative Rectoration, a spoon-and-an-alpha can survive *more of a change*, or a greater shapewise change, than any spoon can make it through. In words to the same conceptual effect, the

*persistence conditions* of spoons are - with respect to (processes of) *Rectoration* – a very *little bit stricter than* the p-conditions of spoon-and-an-*alphas*.

Next, consider the *rest* of the course of our contemplated *Rectoration*, wherein matter first constituting a spoon-and-an-alpha comes to constitute, eventually, a perfectly rectangular solid material persistent. Now, within this differently limited framework, let's consider a certain fractional part of *that* – say, three-sevenths of the rest of the course. Notice that, as our *Rectoration* is infinitely refineable, we may take *any* consistently imaginable fractional part here, and there'll be something, in (our supposed continuous material reality) to answer to what we'll be imagining. Anyway, we're having it be three-sevenths – of the rest of our *Rectoration* – that we're now considering.

That said, we'll observe that there'll be a certain kind of material persistent – we may call it a spoon-and-an-alpha-*and-a-beta* – that will persist through precisely this much of our shape-transformative process. So, while material objects of just this kind will last through that much of our *Rectoration*, none of them will (or can) last through any more of a shapewise change than that, in the indicated transformative direction: Even just an *iota* more of a change, in this anti-spoon and pro-brick direction, will mean an end to anything that's a spoon-and-a-beta.

Precisely parallel with the step just related, we may take, quite automatically, infinitely many more such steps. As is evident, I've suggested an easy way for us to notice infinitely many (sorts of) material persistents, each of which may be, at the start of our *Rectoration*, spatially coincident with all the others, and each of which will have different persistence conditions from all the others.

Now, as I'm sure you'll readily realize, whether it's purely shape-transformative or whether it's otherwise, a full Rectoration will put an end to any proper *lump* of matter, although it *won't* put an end to any *piece* of matter, or even to any *hunk* of stuff. From that realization, it's only a short step toward realizing that, correlative with the points just made about spoons and their ilk, as with spoon-and-and-alphas, there will be perfectly parallel inanities holding true, quite as well, for lumps and *their* ilk, as with (what we might well call) *lump-and-and-a-tads*, for example: With regions where we may initially think that we're encountering just a paradigmatic lump, so to put it, and not also many merely *moderately-lumpily-shaped* persisting *nonlumps*, as well, we'll now happily notice that, right where our very proper lump is, and constituted of the selfsame matters as that which constitutes the lump, there may be an *infinity of other* persisting material particulars. For having different persistence conditions from a lump, at least very slightly different p-conditions, none of them will be lumps of matter. As each of these (infinitely many) spatially coincident concreta has different persistence conditions from all the others, each is a member of a kind of material persistents that's distinct from all the others' kinds. And, so, each concretum is a material persistent that's *numerically different from* each of the infinitely many others – even if it should be that, in at least all the most typical situations, each is precisely similar to all the others, or, as philosophers often say, each of these objects is *qualitatively the same as* any of the others.

In closing this section, I'll briefly put its work in perspective: While this work has a certain philosophical interest, I think, it's not crucial, to its chapter's main lines of reasoning. Indeed, as regards all our essay's most central thoughts, there's nothing attained with these infinite cases that's not already attained, quite well enough, with

various merely finite cases: Whether we're dealing with (what are presumed as) infinitely many spatially coincident different material persistents or whether we're dealing with (what are presumed as) only finitely many, all the thoughts on material persistence that we've saliently presented, so far in this chapter, are utterly inane ideas.

### **7. Using These Sentences Very Differently, so as to Express Some Substantial Ideas**

At least to all appearances, we live in a fundamentally fairly gradual world, as far as this world's material realm is concerned, just possibly its only realm.

Still and all, there are many (instances of) abrupt phenomena, even among readily perceived phenomena.

For one example of that, there's this: A certain river-crossing bridge may be barely able to bear a certain load near the center of its river-crossing span. That is, a load that's just a tad less than that won't mean any great disturbance. But, when a load greater than the span's limited capacity is placed right there on the bridge – even a load that's just a little bit greater – the bridge will collapse. All of a sudden, much of what spanned the river will break apart from the rest of the bridge, and it will fall into the river.

For a second example of that, evidently much more extreme, there's this other (sort of) case: An enormously powerful bomb is dropped on the bridge, perhaps from a bomber-plane flying high above, in the sky. Upon impact with the bridge, the dropped bomb explodes and the bridge will be blown “sky high.” When that happens, all the matter that served to compose the bridge will suddenly come to compose nothing more cohesive than millions of tiny pieces of matter, each spatially distant from all the others.

Being pretty proficient in recognizing which inane ideas are correct inanities, and which are incorrect, it's with some fairly considerable confidence that I'll endorse this next pair of analytically inane propositions: In the first case, the case of the bridge collapsing under the heavy load, the original bridge will still exist; it will just be that there's a badly broken bridge where before there was a bridge in fine shape. By contrast, in the second case, the case of the pulverizing big bomb, a quite opposite inane idea will be in place. In this case, all the original bridge's matter will come to compose nothing more cohesive than millions of mutually distant material smithereens, or millions of widely scattered smidgeons; and, with that being so, the bombed bridge then won't exist.

Let's focus on the second of these cases, where a certain bridge doesn't survive the destructive effects of a terribly powerful exploding bomb. Why did our considered bridge fail to survive this event? In answer to that question, there are many things correctly to be said. Of course, each of them is consistent with all the others, even while some are very impressively detailed and, at another extreme, others are so very unspecific as to appear almost pointless.

For making much philosophical progress, it may be useful to ponder some of the very unspecific responses. With that in mind, consider this: The bridge ceased to exist when it was so very destructively bombarded because, in our actual world's current Eon, *no ordinary material complex can possibly survive* such a very destructive event as that extremely powerful explosion, which will so radically tear asunder the matter composing the complex that, in the event, the matter comes to compose nothing more cohesive than just so very many mutually quite distant little pieces of matter..

With several of the sentences just lately placed on offer, I've adverted to some substantial thoughts about concrete reality, even if none of them should be any philosophically important propositions, or thoughts, or ideas. Or, at the very least, that will be so, providing that we grant - quite as I *am* now granting - that there *are such things* as river-crossing bridges, and such things as very heavy loads, and such things as very explosively destructive bombs, and so on.

One such concretely substantial but currently uninteresting thought is this proposition, a thought that's as safe to assert as it's peculiarly specified:

There are river-crossing bridges that, though they *won't collapse* under a load of *two tons*, placed at, or near, the center of their span, certainly *will collapse* under a load of *two million tons* placed there.

Now, if we all knew extremely little about the actual world, enormously less than, as it certainly seems, we actually do know, well, in that case, perhaps the thought just so safely asserted might be, at least for us, a pretty interesting thought. But, however that may be, and as things now actually are, we appear to know a fair amount about the likes of bridges and the loads they'll bear. So, as things are, the contemplation of this safely said proposition won't be any interesting intellectual experience.

Saliently related to the pretty uninteresting substantial idea just encountered, there's this very different concretely substantial thought, also reminiscent of some of our very recent discussion, and also quite uninteresting:

There are bombs that are so very destructively explosive that, when one is dropped on a river-crossing bridge, and it explodes upon impact, the bomb will blow the bridge into millions of mutually separate and distant tiny smithereens.

In fairly short order, I'd like to place on offer some other happily substantial thoughts that, by contrast with the two just displayed, may be of much greater current interest, if only for us just to contemplate.

As will eventually become apparent, it will be useful to postpone that presentation. For, in preparation for my offering the interesting far-fetched thoughts, it's useful to rehearse, or to reconsider, a couple of analytically inane ideas, both of them suggested by this section's opening passages. Here's the first of these analytical inanities; as far as I can tell, it's a correct inane idea:

If there's placed, near the center of the span of a river-crossing bridge, such a very great load that the bridge then and there collapses, and if, beyond this, nothing more momentous than that ever happens with the bridge, or with its constituting matter, then the bridge *will continue to exist* (though it will be, of course, a bridge in a state of collapse).

And, here's a saliently opposite analytically inane proposition, also quite correct, as far as I can tell:

If there's dropped, near the center of the span of a river-crossing bridge, such a very powerfully destructive bomb as will cause the whole bridge to be blown into millions of tiny separate smithereens, and if, beyond this, nothing at all notable ever happens with the bridge, or with the resulting smithereens, or with their constituting matter, then the bridge *won't continue to exist*..

Very far from those two inanities, and far from all other concretely inane ideas, as well, I'd like to place on offer, in fairly short order, some concretely substantial thoughts, each worth some thoughtful consideration.

As I suspect, I may well have some success with that. And, as I imagine, that may well be the case even if the thoughts I'll place on offer won't be any plausible propositions, let alone any very credible ideas.

In a fairly open-minded spirit, let's return to consider our much-discussed lump of copper, a lump whose copper is quite malleable material, and quite ductile stuff, and quite fusible metallic matter. Now, when such very malleable matter as that becomes involved in, and it undergoes, one of our purely shape-transformative processes, say, Rectoration, then, (in the actual world, and during this present Eon) there's *nothing wholly distinctive* that takes place, as far as anything *fundamental to concrete reality* goes. As far as the most fundamental material considerations go, there'll be nothing that's absolutely destructive, or completely annihilational, that ever happens, throughout the happily gradual, pretty uneventful shape-transformative process. Rather, whatever takes place at any one point, in such an actual process, is a very great deal like what goes on at each of the terribly many other points of the process. It's just this that happens with, for instance, the nicely smooth material change from the potato-like shape of some lumped copper to the rectangular brick-like shape obtaining at a Rectoration's end.

And so it will be, too – just so very smoothly and gradually, it will be - with whatever *other* processes must also go on, during this present Eon of our actual world, *in order for there to be* such a nicely gradual shape-transformation of our copper – as with, for a salient example, a very smooth *alteration in the arrangement of* whatever copper atoms may constitute the (less than perfectly continuous) metallic material that, during this present Eon of our actual world, may compose a copper lump, or a copper brick.

By contrast with that, we may conceive concrete possible worlds very different from our own, and distantly past Eons of our actual world, possibly very different from our present Eon. In these very different situations, matter will be, in certain salient ways, propensitized very differently from how it is that, during this present Eon, our actual matter's (presumably been) propensitized. One way for there to be such a materially salient propensitive difference is this: Matter may be so propensitized that, while it *will continue to exist through certain* ranges of the shapes it might (be imagined to) assume, still, and in the very same bargain, *it won't continue to exist upon its (being on the verge of) assuming other shapes*, shapes that aren't within those ranges. In such an event as that, when some salient matter "attempts to assume" what we may call a *radically different* shape, the matter will cease to exist, ever so suddenly and perfectly directly.

(While it's not essential to the success of our imaginative exercise, we may make our extraordinary suppositions most vividly, I'll suggest, by imagining matter that's perfectly continuous matter. So, unless I indicate otherwise, we'll do that.)

As a fairly specific example of the point just offered, this following case dovetails nicely with our recent discussion of Rectoration: When some lumpily shaped matter is on the verge of forming something with corners, the matter suddenly ceases to exist, quite as it's propensitized to do, without it's ever assuming a shape even just very much like any truly rectangular solid's shape. As this feature of the matter is as fundamental to the imagined concrete reality as anything could ever be, it's impossible for this matter to assume any brick-like shape.

At least in my own idiolect, a nice way to describe such a terribly anti-rectilinear situation is to say that (with the concrete reality currently considered) a *lump* of matter

*can't survive* a process of Rectoration. Equally all right, we might indicate the *substantial* point at which we're now aiming by employing somewhat different words, nicely suited for referring, most directly, only to the *matter* in question: Freestanding *matter that's shaped in a lumplike way can't survive* Rectoration.

By contrast with what we've just been considering, there are other possible concrete worlds where, at least in my idiolect, only the first of those two descriptions will be accurate enough, or aptly fitting. That is, while it will be fine to say that *lumps* of matter in this world can't survive (attempted) Rectoration, it *won't* be so fine to say that *matter* serving to compose such lumps won't survive any such (attempted) transformative process. But, what am I getting at, here? I must explain myself.

With concrete worlds where much matter may suddenly cease to exist – rather than the matter ever coming to be shaped in any “forbidden form,” there will be worlds which feature, as we may well say, *the most radical way for* a (previously) persisting material object to (first) fail to persist. With certain *other* conceivable worlds, by contrast, we may have, instead, *only fairly radical ways for* such material persistents to suddenly cease to exist. How's that? I must explain myself further.

Starting over again, we'll now consider a world where, partway through an (attempted) Rectoration, all the matter in an object that's just *pretty* lumpily shaped – maybe it's almost as much shaped like a brick as it's shaped like a lump – the matter breaks apart, the millions of tiny descendant pieces all flying asunder. Now, none of this matter ceases to exist. Still, after all the flying about willy nilly, none of it will constitute anything more impressive than a tiny shard-shaped smithereen; certainly, none will serve to compose any freestanding rectangular solid concretum.

As I've just been envisioning things, there are some concrete worlds, or temporal Eons, in which, even quite fundamentally, the matter that's then there – or some of it, at least - is propensitized to explode abruptly into very many roughly equal tiny material pieces, under conditions conducive for the propensity's dramatic manifestation. Of course, these conducive conditions will most saliently include conditions pertaining to certain ranges for the matter's shape. When some great force may "try to bend" the matter beyond a limit, of any of these ranges, the matter will explode into just so very many mutually distant material freestanding smithereens. As I've suggested, and as I'll now submit, with worlds like that, we'll encounter a concrete reality about which, quite aptly enough, we make some pretty interesting concretely *substantial* comments. Quite straightforwardly, we may do that with some such by now familiar words as these: When a lump of matter is involved in a process of (attempted) Rectoration, then that lump will cease to exist, even though the matter that constituted the lump will continue to exist.

In just this present section, we've already managed to contemplate two very different sorts of concrete worlds, each with a sort of a material realm propensitively very different from the other's, and each very different, as well, from (what we suppose to be) the actual world's current material realm.

Does our shared Scientiphicalism acknowledge the possibility of such worlds as these? I'm not sure. Why the uncertainty? Well, I'm unsure about what may be certain dictates of this Scientiphicalism and, with that, I'm uncertain, correlatively, about what may be left open by this somewhat sketchy Metaphysic.

By contrast, in the section directly upcoming, we'll be imagining possibilities which clearly conflict with the dictates of our Scientiphical Metaphysic. Reminiscent of

the previous chapter, we'll again consider some *time-selective* propensities – although the dispositions to be considered will be very different time-selective powers from those we've previously pondered.

### **8. Matter Time-Selectively Propensitized to Reject *Reverse Processes***

When discussing the utter cessation of material *lumps*, in the just previous section, we considered some concretely substantial thoughts about how, in certain concrete worlds, or Eons, *lumps* of matter might cease to exist. Each of these points finds a parallel in a concretely substantial idea about *pieces* of matter. For instance, we considered how a certain lump of matter should cease to be though the sudden annihilation of all the matter composing the lump, which annihilation the matter was propensitized to undergo. And, far less radically, we considered how, through the explosion of a particular lump of matter into very many sharply thin smithereens, which explosion of that lump's matter was propensitized to undergo, the lump should then cease to exist. Correlatively, as we'll now observe, a certain *piece* of matter should also cease to should cease to be though the sudden annihilation of all the matter composing the be the piece; and, far less radically, through the explosion of a particular piece of matter into very many sharply thin smithereens, that piece will then cease to exist.

In the worlds, or Eons, then considered, much matter was propensitized very differently from how it is that, in the actual world, during this current Eon, very much matter is actually propensitized. Focusing on such more familiar matter, I'll provide some simple reminders. These reminders will set the stage for presenting some yet further

new ideas about how some very unfamiliar matter may be propensitized, these new ideas being the centerpiece of this present section.

As everyone knows, we take it, with any *typical piece of real-world copper*, its constituting copper will be a happily malleable material. Under anything even remotely like ordinary conditions for reshaping copper, that material won't abruptly explode, much less will it suddenly be utterly annihilated. Just so, when a piece of this malleable stuff is involved in a happily ordinary process of Rectoration, it will be involved in a smoothly gradual process. Accordingly, its involvement in the Rectoration *won't* mean an end to the involved *piece* of matter. Rather, it will mean no more than a change in how it is that the selfsame piece is shaped, a change from that piece's being in the shape of a lump to its being in the shape of a rectangular solid.

What's more, the rectangular solid, produced by our Rectoration, is composed of happily malleable matter, too, indeed, it's the same malleable matter, just precisely as malleable as before, that previously composed the lump featured at that Rectoration's start. Accordingly, we can *reverse* what we did in that Rectoration, transforming the matter's shape from that of a rectangular solid to a quite lumpy shape, suitable for a lump of matter. (At the end of this *Reverse Rectoration* as we may call the process, or this *Lumpification*, as we may also aptly call it, will there be the very same *piece* of matter that was featured at the start of the aforesaid Rectoration? And, a different question, will there be the very same *lump* of matter with which we first began? To the first question, I'm confident that the correct answer is the affirmative answer; of course, it will be the same piece of matter. As I'm also confident, there's just a correct analytical inanity here, nothing more impressive than that. With the second question, concerning numerical

sameness of our earlier lump and our later lump, I'm not sure as to what the correct answer is, or even whether it has any definitely correct answer. But, as with the first question, I'm confident that this second question also concerns only an analytically inane issue, not any concretely substantial matter.)

With respect to ever so many readily imagined processes, much of the actual world's current matter will readily undergo not only the process imagined, but also the obvious reverse of that process, just as readily imagined. Just so, the matter serving to compose many ordinary sorts of things, as with copper balls, for example, can be split apart in ever so many ways. Among all these many ways, this actual *splittable* matter, as I'll call it, can be (at least roughly) bisected, or split into two (roughly) equal pieces; and it can be trisected, or split into three equal pieces; and it can be *pentasected*, to coin a term, for having something be split into five equal pieces, and so on. As the matter's propensitive nature has it, these processes can be reversed. So, the two pieces resulting from bisection can be fused, or rejoined, with the upshot being a single freestanding cohesive piece of matter, typically ever so like, in all intrinsic regards, the originally bisected piece of matter. Similarly, with a piece that's been pentasected; the matter composing the resulting five pieces can then be fused, or rejoined, ever so nicely.

Consider an ordinary copper ball. Right where the ball is there's a spherical piece of copper, as well as the copper that composes, at once, both the ball and the spherical piece. Or, at least, let's suppose that to be so. Let's now imagine that this cuprous matter, and with it the ball it composes, and also the piece it constitutes is pentasected, with each of the resulting five cohesive freestanding pieces scattered far and wide. Let's also suppose that, still later, all this copper nicely rejoined, so that a copper

ball is formed, ever so like the first copper ball, and composed of just the very same matter. As well, of course, there'll now be a spherical piece of copper right there, right where the ball is, and also composed of just the very same matter. Or, again, let's suppose that to be so.

Various mainstream philosophers may take different positions regarding the question of whether the ball that's now present is numerically the very same ball that preceded the pentasection. As well, various analytical philosophers may take different positions regarding the questions of whether the (spherical) piece of copper with which we started is, at the end, the very same (spherical) piece that's then around.

As should be quite obvious, by this point, any disagreements among these thinkers, regarding either of these questions, are only disputes concerning only just so many analytically inane issues. But, a certain position on these questions may, for us, be a helpful stimulant toward some pretty novel concretely substantial ideas. I'll explain.

Consider the position of an analytic philosopher who says something like this: "In situations like that just envisioned, the original ball won't be present at the end, and also the original piece of copper won't, at the end, be the piece of copper that's there." As she'll say, "A ball can't possibly survive all that; nor can a mere piece of matter possibly persist through so much disruption."<sup>7</sup>

When such sentences are standardly used by mainstream philosophers, they're employed so that the thoughts they express are just analytically inane proposition, whether the thoughts be (analytically) correct or whether otherwise. But, even as we saw in the previous section, such sentences can be used in a *used in a very different way*, in which case they may serve well to express concretely substantial propositions and, at

least sometimes, even substantial thoughts that are characteristically philosophical ideas. In that section, we observed how such sentences can be used to indicate two ways in which, quite fundamentally, matter may be unusually propensitized, each way notably different from the other. Now, I'll observe a third way, one that's notably different from both ways previously observed.

Early on in this section, we observed that, in our actual world right now, there's much quite malleable matter. As this matter's propensitized, it can be transformed from being in the shape of a ball, or a lump, to being in the shape of a cube, say, and then it can be transformed, in a way that reverses all that, so that, once again, it's shaped like a ball, or a lump, as the case may be. And, as we also observed, there's lots of matter that can first be split apart and then, reversing what just happened, it can be rejoined, or fused together. But, at least in other concrete worlds, and maybe other Eons of this world, all the matter may be propensitized in a way that's radically different from this.

In a fairly general way, let's explore that apparently very real possibility.

As Extended Scientiphicalists think, in our actual world, and in our present Eon, each material process will have a real reverse material process, also a wholly material process, of course. Or, at least to the extent that matter is conserved, as with all classical physical processes, that will hold true. Or, at the very least, that will hold true for very many physical processes, and for an extremely wide variety of such processes. Indeed, this last sentence may be overly cautious here. For all I really know, in the vastness of my ignorance, this "reversibility thought," or at least a thought very much like it, is a fundamental feature of physical science, at least of the physical science that human beings have so far developed. But, however favorable may be its status, among this or

that thoughtful community of human inquirers, this idea of reversibility is certainly not any strictly necessary truth. Comporting well with that sensible statement, various substantial denials of reversibility are easy to conceive, even quite clearly, for very many of us humans. And, let it be said, quite clearly, that this mass of humanity includes many who've got neither any highly esoteric knowledge nor any very special mental power.

So it is that we can envision, quite clearly and easily, matter that's so propensitized that, once it's gone through a certain process, it won't ever go through any reverse process – *nor even* any process, *at all*, that will have it come to be, again, just as cohesively together in just the way that, before, it was arrayed, arranged, or configured. Indeed, we can even quite easily and clearly imagine quite as much as this: In the very distant past, some Eons may have featured only just such matter as was so propensitized that, if it should first be configured in a certain way, as with, say, it's being configured in a spherical manner, and then it ceased to be so configured, coming to be configured in a nonspherical manner - well, from then on out (or, at least unto the end of the temporally very long Eon) none of that matter would ever again be configured in that same first way – nor would any of the matter ever again be even “part of a batch of matter” that was spherically configured. (Indeed, for all anyone really knows, in some distantly past Eon, or Eons, possibly long before the presumed Big Bang, things actually were like that.)

Whether it comes discreetly packaged, in many elementary particles, or whether it comes in a perfectly continuous piece of matter, perhaps infinitely vast in all spatial directions, or whether there should obtain something different still, alternative to both the two just aforesaid possibilities, the matter we're now imagining will be propensitized, at all events, in a *time-selective* manner: What this imagined matter is capable of “doing” at

any given time, will depend, at least in part, on what the matter's *already done*, at earlier times, in a very broad sense of "doing" and "done," of course, broad enough to include, say, some matter's having endured through some moment, or through many moments, during which time it was always was spherically configured, as well as including, just as well, some matter's changing shapewise, as with its changing from being shaped spherically to being shaped nonspherically, and as with its changing shapewise oppositely, from being shaped nonspherically to its being shaped spherically .

With the very real possibility of such time-selective matter in mind, there is a third sort of general thing that, pretty naturally, we can use our "persistence-condition sentences" to express. At least somewhat interestingly, this third thing is *less radical* than what goes on with the annihilation of matter. On the other hand, this third thing is *more radical* than what happens with the mere dispersal of matter, as with even the most far-flung of our smithereenish explosions, let alone what goes on with material reshaping.

For a helpful illustration of that, let's consider concrete possible worlds where what may happen is as follows: In these worlds, while the copper that wholly composes a copper ball is fully reversible stuff – much as most of us presume all ordinary matter to be – the carbon that composes a diamond, say, is *not* so very reversible. (Never mind the exact wording I've used to indicate the worlds; if you don't like it, you can easily supply some relevantly tamer and more circuitous wording. And the same goes for almost everything else in the book.)

Well now, along that general line, let's more specifically suppose that, while the copper can first be exploded into many pieces which then can be restoratively rejoined, in a perfectly reverse process, nothing at all like that is true of the carbon. Rather, the

situation is this: As may happen on many occasions, the (the carbon composing) a diamond is exploded into very many terribly tiny bits of carbon, each of them so very terribly tiny that it then serves to constitute no diamond at all. Well, once that happens, the carbon that's in any of the bits (will have become and with, so, it) will be so propensitized that it simply cannot be rejoined, into anything even remotely like the diamond-composing lattice-arrangement it once enjoyed. Not through any perfectly reverse process will this be propensitively possible, nor will it be allowed, by this time-selectively propensitized matter, in any way at all. As given how the carbon in these bits is now propensitized, that carbon also can't ever, in any other way, ever again serve to constitute any diamond. (We suppose at the end of the Eon, all the Eon's carbon, at least, and maybe even all the Eon's matter, is utterly annihilated. This additional supposition's made just to forestall, or to nullify, certain possible objections. At least for the most part, we needn't pay any attention to it, in what follows.) Of course, it will be best also to suppose that, all along, all the world's carbon was propensitized to in just such a way that, should it be smithereenly exploded, it would (become and, so, it would) be only some very "uncooperative" carbon – so far as any "diamond-constituting project" should ever be concerned. So, we'll do that.

When we're making that supposition, we'll be supposing that, when any biggish batch of this carbon undergoes a smithereenish explosion – which biggish batches include all those where the batch's carbon serves to constitute a diamond – well, then there's the *manifestation of* a propensity, to just such an uncooperative effect. As we're aptly supposing, of course, this propensity is *common to all* the Eon's carbon – not only that which (at some time) serves to constitute a diamond, but also that which, as it happens,

never does. And, as we're also aptly supposing, of course, all the Eon's carbon is *always* propensitized in just this (at least potentially) "conditionally" uncooperative way, (at least) from the start of the Eon right through (to) the Eon's end.

In a world where these suppositions hold, carbon that's been involved in a smithereenish explosion won't ever (again) be fit toward serving to constitute any diamond. And so, in particular, such carbon as may, at an early time, serve to constitute a certain particular diamond, which diamond suffers a smithereenish explosion, well that carbon won't ever again constitute that diamond (or any other diamond, of course, though this bracketed material is irrelevant to the point I'm in the midst of making, right now). Now, in order for a suddenly exploded diamond to later exist, sometime well after the matter that once constituted it has been scattered far and wide, the scattered matter, or at least some of it, must again serve to compose a material object that's in a proper (enough) diamond form. As none of our considered exploded diamond's matter can ever do that, quite as our suppositions must have it, so the exploded diamond won't even ever again exist. So, quite certainly, it won't exist right after the explosion, when it will be very widely scattered matter, none of which is, or is any part of, anything in the form of a diamond.

What's more, and for greater vividness, we can make our suppositions more specific still. Here's one nice way to do that: Once it's undergone the sudden separation produced by one of our (imagined) smithereeny explosions, any carbon that's in any of the resulting terribly tiny bits will be propensitized to repel, ever so forcefully, *any other carbon* that there is – whether *or not* the other carbon is serving to constitute a (free-standing) tiny bit of the stuff. For its having gone through such an explosive process, and

for its thus having acquired this repulsive propensity, *this terribly repulsive* carbon will be unable to participate, for the rest of its Eon, in the composition of a diamond – any diamond at all.

When we think of a concrete reality of *that* sort, we're engaged in pondering some very substantial ideas. These concretely substantial thoughts will, as far as I can determine, conflict with our currently habitual ideas about concrete reality, or about the present Eon of actual reality, saliently including our Scientiphical suppositions. Now, as we also do well to remember, these presently pondered thoughts – concerning this time-selectively propensitied matter – well, they'll *also* differ substantially from many concretely substantial ideas that, far from being Scientiphical propositions, positively *conflict with* Scientiphical doctrines. For example, theses thought of time-selectively propensitied matter conflict with, quite obviously, our thoughts as to matter that, upon undergoing certain sorts of physical processes, will be completely annihilated: Matter that's no longer existent can't be any existing terribly uncooperative matter.

As many will recognize, this last idea, concerning material utter annihilation, is a thought that's at least very much like the accepted idea that matter may be transformed into energy. For that reason alone, as well as for others, too, this thought of material annihilation isn't any very novel idea. By contrast, I think, the thought about the likes of our suddenly terribly repulsive carbon may be significantly more novel. (I'm not really sure of this. And, what's more, I don't care about that very much. But, I do care about it a little bit, just enough for me to have mentioned the matter.)

In closing this section, let me give express my emotional reaction to what we've been doing: While I'm often quite as fully up to my neck in inanity as are most

mainstream philosophers, that's certainly not always so. Nicely in line with that, I'll happily say this: This present section's perfectly substantial ideas are, at least for me, a very welcome change from all the inanity in which, for a very long time, and almost without respite, I've been intellectually embroiled.

### **11. Fundamentals of Fundamental Material Persistents**

By contrast with ever so many inane ideas about material persistents, we've just been confronting, instead, some substantial ideas about how some material things may cease to exist even while, by contrast with all of them, some other material things may continue to exist. In attaining this happy confrontation, we've proceeded, in largest measure, by considering certain sentences philosophers often use to express mere inanities, and by our employing these same sentences in quite a different way, instead. Just so, we've used the sentences to express some thoughts that are not only some happily quite general substantial propositions, but that are, as well, some concretely substantial ideas.

Canvassing the concretely substantial persistence-thoughts we've so far considered, I find it, pretty doubtful, I admit, that any of them is actually true of our actual world, during this current multi-billion-year Eon of our actual reality. In this present section, I'll try to change gears quite dramatically: Here, I'll endeavor to articulate some substantial thoughts, about material persistents, that may well be true of our actual world right now, during this current Eon of ours.

In this endeavor, I needn't start from scratch: In *All the Power in the World*, I've already said a fair bit about the persistence of (whatever are, or whatever we should suppose to be) the actual world's *basic* concrete particulars and, in particular, a fair bit

about the persistence of its basic *physical* substantial individuals.<sup>8</sup> Beyond repeating some of that here, the only other thing I should do, in these pages, is make *correlative* points about *the persistence of the matter that serves to constitute* – or that may come packaged as, or packaged in – the enduring fundamental physical particulars. As I imagine, these correlative thoughts perfectly parallel the previously proffered points about the persistence of the basic physical individuals themselves. Putting together all the things I’ve just said, the upshot is this: The points I’ll now place on offer, about (presumably actual) persisting *matter* will all *parallel*, quite perfectly, points already made in my longest book, which older points concern the persistence of basic *material individuals*.

Having provided an ample preamble to this section’s real effort, I’ll get right down to the execution of its intended endeavor.

Certain presumably basic physical particles may annihilate, or they may self-annihilate - with various results, in various cases. Or, at least, that’s what I’ve been hearing. Anyway, let’s now imagine a most extreme case of that quite general course, a case in which, by the end of the imagined example, there aren’t any physical remains of the particle that annihilates. And, in parallel with that, there’s nothing that remains of the matter that wholly constituted the abruptly ceasing fundamental particle. And, finally for now, let’s suppose that this isn’t just a purely random happening.

Even given just that much, we may do well to ask this question: *Why did our imagined particle cease to exist?* And, we may also do well to ask this parallel question: *Why did our particle’s matter cease to exist?*

In *certain* cases, maybe all just so many hypothetical cases, there won't be a decent answer, to either of the parallel questions: It will be just purely random that the basic particle ceased to be. And, in the same bad bargain, it will be just purely random that its constituting matter ceased to exist. In these cases, there'll be nothing whatever for anybody ever to understand, about why the noted occurrences are the events that occurred. But, as we've supposed that our imagined particle's cessation *isn't* purely random, and we've supposed that much for its *matter*, quite as well, the case we're considering is quite unlike that.

Quite as well there may be some utterly random happenings, there may also be, by contrast, some rather more *intelligible* cases, each of them being, at the least, an example of a *somewhat* intelligible occurrence. Here, there *is* something for someone to understand - - at least a little bit of a something - about why it is that our basic particle ceased to be, and about why it is that its matter ceased to exist. In these cases, the particle in question will have a *propensity to annihilate* or, what's here the same, a *propensity to be annihilated*. And, in the bargain, the particle's matter will have an annihilational propensity. In cases of *this* sort, a particle will have ceased to exist *because*, first, it *had* a propensity for so ceasing and, second, the particle will have *manifested* that propensity. And, so it will be, too, for the propensitized *matter* serving to constitute the particle in question.

In some of these more intelligible cases, a particle's propensity to cease may be perfectly deterministic: First, the propensity may be deterministically set to be manifested, in just a certain range of conditions and, second, the particular condition of its manifestation, within that range, may be deterministically set to obtain. As may have

been fully determined, for example, the particle may always be propensitized so that it will continue to exist for as long there's at least one electron within a meter of its center and, on the other side of that propensitive profile, it may be always fully disposed to *cease to exist otherwise*, that is, in case there's *not* any electron that nearby. So, when it should come to pass that there's no longer even a single electron within a meter of the concretum's center, an event that, at least from very long ago, may be fully determined to occur, then, willy nilly, that basic particle self-annihilates and, with that sudden event, the particle ceases to exist.

What's true for our particle may hold true, as well, for the matter of which it is composed. So, just as the particle may be propensitized to self-annihilated under the specified condition, the matter constituting the particle may be similarly propensitized to self annihilate. To have things sounding most naturally parallel for the matter, we might prefer to put this point about it in these correlative terms: The *matter composing* our particle may always be propensitized so that it will continue to exist for as long there's some matter composing an electron within a meter of its own composed electron's center - that is, some matter composing at least one such electron - and, on the other side of the aforementioned matter's propensitive profile, this stuff may be always fully disposed to *cease to exist otherwise*. Well, when these terribly material conditions obtain, then, willy nilly, and as a manifestation of that determinist disposition of the stuff, the matter ceases to be.

Reflection on that brings up these complementary ideas, not yet explicitly articulated for our imagined particle: Just as holds true of its constituting matter, our basic material individual is *so propensitized* that, when *other* conditions obtain – other

than those “triggering” its annihilation, of course – the particle will *continue to exist*. We *won't now* suppose that, until the time when its annihilation-conducive conditions obtained, it was just purely *random* that the basic particle *continued to exist* - there then having occurred, so to say, a series of happy accidents to just a persistent effect! To the contrary, the (complementary) substantial supposition here is that, just as our same considered concretum is (deterministically) propensitized to *cease* when *certain* conditions obtain, so it's (deterministically) propensitized to *continue to exist* – that is, it's just so propensitized *not to cease* - when *any other* conditions obtain.

As intimated, we may suppose, just as substantially, a parallel propensitive profile for the matter composing our particle: Even as *this (constituting) matter* is (deterministically) propensitized simply to annihilate when *certain* conditions obtain, so *it's* (deterministically) propensitized to *continue to exist* - that is, it's just so propensitized *not to cease* - when *any other* conditions obtain.

Though I'm not one who (even so much as pretends) to understand what's what with (supposed) matters of objective probability, I'm happy enough to allow that there really are, in basic concrete reality, irreducibly probabilistic phenomena – a supposition that many very smart people think makes perfect sense to them and, what's more, a proposition that many smart people think holds true, as well.

In line with that, I'll happily allow that, in some possible worlds, at least – and maybe in this actual world, right now – various basic particles are propensitized probabilistically, with certain (sorts of) particles having certain probabilistic propensities, even while others have certain other probabilistic proclivities. Apparently, that may happen in a very wide variety of ways. One way for this to happen is for a particle to be

thus propensitized to only a very, very low degree – so to say. For example, according to many of the grand unified theories (which try to unify gravity along with the strong, weak, and electromagnetic forces), a proton should decay, as it has a probabilistic propensity to do that, with an enormously long “half-life” - something like  $10^{33}$  years. (By contrast, the so-called Big Bang is thought to have occurred only about  $13.7 \times 10^9$  years ago; and, along with that, of course, our so-called *observable universe* is thought to have existed for only that many years.) Given those ideas, (I’ll say that) a given proton is probabilistically propensitized to self-annihilate within the next day, and to cease to exist in the next day, to only a *very, very low* degree.

(In astonishingly striking contrast with protons, free neutrons have a very short half-life: When a neutron isn’t (“stabilized,” by being) combined with protons in an (atom) nucleus, a neutron will decay with a half-life of around 10.3 minutes! Given this *very different* proposition, (I’ll say that) a given *free neutron* is probabilistically propensitized to self-annihilate within the next day, and to cease to exist in the next day, to *quite a high* degree. That said, let’s return to think of particles like our proton, that are to a very, very low degree probabilistically propensitized to cease to exist, in any timeframe relevant for (almost any) human reckoning.)

Within any time period most relevant for us to consider, some particles – presumably protons are among them – may be probabilistically propensitized to continue to exist to an enormously high degree – even while they’re probabilistically propensitized to cease to exist, during this same period, to an enormously low degree. Further, these two probabilities may (well) sum to one. In such a nicely summed case, it *won’t be a purely random matter* whether the particle ceases to be, during the time interval, or

whether it continues to exist. Rather, either way, it will be the playing out of the particle's propensities that (thus probabilistically) determines whether it continues or not; the matter will be (probabilistically) determined by the manifestation of the particle's probabilistic propensities.

With such a particle as that – as enormously long-lived as our protons are (supposed to be) - it might be that these propensities of the particle don't require, for their manifestation, that just some certain conditions obtain, within a certain range of conditions. Rather, it may be that, as regards questions of its persistence and its cessation, how our particle's propensities are, at least in a very important use or sense of the term, quite *unconditional*. I'm somewhat unsure of that point. But, in any case, nothing central to our story rides on it.

I'm well aware that, according to contemporary particle theory, neither protons nor neutrons are considered to be any truly elementary particles, unlike our still-exalted electrons – a situation greatly changed from that which prevailed nearly a century ago. But, while this interferes with my exposition's being, all at once, highly dramatic, and utterly realistic, and, what's yet more, confined to only what's (currently considered to be) physically perfectly fundamental, it does precious little to detract from the main points I'm presently after. (Since the present real state of play, in particle theory, is almost spookily fascinating, I'll provide, in a note, an accessible description of it, penned by a leading physicist.<sup>9</sup>) There's ample reason for me to say that: For one, according to contemporary physics, electrons are perfectly elementary particles and they're expected never to decay, never to self-annihilate. Typically taken to last forever – well, for all the time of our so-called observable universe – electrons are, if anything, even more durable

than protons. As I imagine, for those who may take an electron to have a half-life, an electron will have a half-life at least as long as a proton's.

At all events, with particles just like our protons, we may expect that, during any even moderately short period, only a very, very small fraction of them will cease to exist, perhaps a fraction so small that beings anything much like humans will never detect even so much as a single such particle's annihilation, and cessation.

Just for the sake of an argument both vivid and instructive, let's suppose that, during the past century, only one of our planets very many protons ceased to exist. In way of a real explanation of this particular particle's cessation, is there anything to be said? Yes; there is. Though it's neither very detailed nor especially informative, what follows the next colon, and completes this very paragraph, will be a real explanation of that: The particle was probabilistically propensitized to cease, even if only to a very, very low degree. And, though its cessation was very unlikely to happen, during the time period in question, its propensity to cease actually was manifested. So, rather than there being any purely random happening here, it was owing to (the manifestation of) its propensity to annihilate that our considered proton ceased to exist.

On the other side of the same logical coin, so to say, we may also give an explanation, at least as real and as good, of the continued existence of a certain proton, over the course of a certain human's lifetime. As should be clear, this explanation will be at least as good as the explanation of why it was that our self-annihilating proton ceased to exist, during just such a relevantly short period. Indeed, as we're now explaining only what's to be expected, with our continuing proton, this may be a much better explanation, at least in certain salient ways. Proceeding as follows, this account will nicely

complement the explanatory offering presented in the just previous paragraph: This (still-existing) proton was *probabilistically propensitized to persist*; indeed, it was so propensitized even to a *very, very high* degree. And, no surprise at all here, it was just that enormously likely event came to pass, this enormously likely manifestation of the particle's propensitive profile. So, ever so far from its being any purely random happening, *that's why* the proton *continued to exist*, and that's why, right now, *it (still) does exist*.

In this section I've presented quite a few inane ideas. As I hope, some may provide some use useful instruction or clarification, at least modestly useful. But, as well, these somewhat useful inanities should have suggested to us, by now, at least a few far more substantial claims. One substantial thought, which they might suggest, is this idea: At least in certain possible worlds, including, apparently, this actual world of ours, there *are* basic concrete physical things *propensitized to continue to exist*, whether they're so disposed quite deterministically or whether, as seems to be so in our own actual Eon, they're so propensitized only probabilistically. And, in a relevantly perfect parallel with that, there'll also be this perfectly substantial proposition: Much of the actual world's matter, at least, is propensitized to persist, whether the matter is so disposed deterministically or whether probabilistically.

Unlike many of the pretty novel substantial thoughts I've previously offered in this book, these more recently proffered substantial claims aren't any rather far-fetched propositions. Indeed, I can't see that they're far-fetched at all. To the contrary, these latest substantial ideas – or, at the very least, some substantial thoughts ever so like them – well, they're substantial thoughts that, as far as we can tell, are perfectly true, or quite

correct. More explicitly and more vividly, these substantial thoughts hold true of our actual concrete world, right now, and they've held true, of our world, for many billions of years past and, very possibly, for very many years to come, as well.

## NOTES

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<sup>1</sup> The *Stanford Encyclopedia of Philosophy*, for instance, has an entry, *Material Constitution*, which provides historical information as well as discussion of contemporary thoughts on the topic. In section 1 of *Material Constitution*, this entry's author, Ryan Wasserman, presents (at least) three puzzles about this matter as being ancient puzzles that, apparently, are still of some interest to mainstream philosophers: *The Debtor's Paradox*, *The Puzzle of Dion and Theon*, and *The Ship of Theseus Puzzle*. The last-mentioned of these is of very great interest to very many current and recent mainstream philosophical thinkers; when one plugs "ship" and "Theseus" into the "with all words" slot of Google Scholar's Advanced Search, and when one requires, as well, that at least one of the three words "puzzle", "paradox" and "problem" also be present, that Advanced Search returns a list running into the thousands, with the first item in this long list, I'm happy to say, being Theodore "Ted" Sider's very fine and fairly recent book *Four-Dimensionalism*, Oxford University Press, 2001.

<sup>2</sup> In John Bigelow's paper, "Presentism and Properties," *Philosophical Perspectives*, Volume 10, Metaphysics (1996), on page 35 we find these nearly consecutive remarks:

The so-called fourdimensionalist theory of time was something genuinely new, when it gradually came into being last century. Russell, Reichenbach, Smart, Quine, Lewis and many other anglophonic, analytic philosophers also denied presentism .... The defenders of fourdimensionalism are very impressive...

<sup>3</sup> Here's a reader-friendly observation: In the previous paragraph, I suggest an employment for the term "concept" on which it will apply, of course, to ever so many

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concepts that nobody's ever so much as even entertained or considered, let alone employed at all intentionally. There are, to be sure, other employments of the term, perhaps every bit as common or natural, on which its conditions of application will be more constrained. On such a stricter course, it will be more straightforwardly natural to speak of people inventing, and having invented, many concepts – as with people in the twentieth century having invented the concept of an email, perhaps, and, without needing a hedging “perhaps,” as with Nelson Goodman's having invented the concept of grue and the concept of bleen.<sup>3</sup> For ease of exposition, it is best for me to use concept in the very liberal way that, in the previous paragraph, I've already begun doing – a way in which it would certainly be more natural to say, and would probably be more correct to say, that Goodman didn't so much invent the concept of grue as he latched onto a certain previously unconsidered concept, namely, the (previously unconsidered) concept of grue. But, nothing in this chapter's main lines of argument depends upon this choice of mine, as one who has read through the chapter will be able to verify. Having made my friendly observation, I return to the main line of our discussion.

<sup>4</sup> Of course, what's represented in the tables goes only a rather small way toward providing (anything even remotely like) a definition of “copper,” or an “analysis of” what it is for something to be a copper sculpture. So, it's quite loosely indeed that I'm using the expression “a.k.a.” – ordinarily used as an abbreviation of “also known as”.

<sup>5</sup> David Lewis, *Parts of Classes*, Basil Blackwell, Oxford, 1991, page 20.

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<sup>6</sup> I coined phrases in this family in my old paper “Why There Are No People,” *Midwest Studies in Philosophy*, IV, (1979), which is reprinted in Volume 2 of my *Philosophical Papers*, Oxford University Press, 1996. For instance, the phrase *vague discriminative expression* occurs in emphatic italics there, just as it does in this very sentence.

For a much more recent discussion of vague discriminative terms, see “Beyond Discriminative Vagueness, Safe from Nihilistic Sorites,” which is the Appendix to chapter 7 of my *All the Power in World*, comprising pages 465-469 of that work.

<sup>7</sup> Though it’s not crucial to our main points here, it may be useful to say a bit about what she may have as reasons for her “strict” views: First, in the middle period, when there are the five freestanding pieces all so distant from each other, the original piece doesn’t exist, and also the ball doesn’t exist. And, second, material concreta, whether they be balls, or whether they be mere pieces of matter, can have radically intermittent existence. Once a copper ball ceases to exist, for example, that’s it for that very ball. Any later copper ball must be some other ball.

<sup>8</sup> In *All the Power in the World*, this is the topic of Chapter 5, Section 18, which is called “Basic Concreta, Propensity for Annihilation and Propensity for Continuation,” and which runs from page 278 through page 286 of the book.

<sup>9</sup> Though electrons are elementary particles, both protons and neutrons are composed of certain sorts of quarks, up-quarks and down-quarks, each of the two being a different (thought related) elementary particle. On page 52 of (the paperback edition of) his book

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*The Cosmic Landscape*, here is Leonard Susskind, an eminent physicist, telling us about some of that:

Quarks are in some ways similar to electrons, although somewhat heavier, and they have peculiar electric charges. In order to have a basis for comparison, the charge of the proton is traditionally taken to be one (+1). The electron's charge is equally big but opposite in sign (-1). Quarks, on the other hand, have charges that are fractions of the proton charge. In particular, the charges of the u-, c-, and t-quarks are positive, like the proton's, but only two-thirds as big ( $2/3$ ). The d-, s-, and b-quarks have negative charges equal to one-third the electron charge ( $-1/3$ ).

Both protons and neutrons have three quarks. In the case of the proton, there are two u-quarks [up-quarks] and a single d-quark [down-quark]. Adding up the electric charges of these three quarks, the result is the charge of the proton:  $2/3 + 2/3 - 1/3 = 1$ .

The neutron is very similar to the proton, the difference being that the up- and down-quarks are interchanged. Thus, the neutron contains two d-quarks and one u-quark. Again adding the three charges, we find the neutron has (as expected) no electric charge:  $2/3 - 1/3 - 1/3 = 0$ .

My paperback, published by Little, Brown and Company, appeared a year after that same company first published, in 2005, the original hardcover edition.