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THE COMPATIBILITY OF MATERIALISM AND SURVIVAL: THE “FALLING ELEVATOR” MODEL

Dean W. Zimmerman

It is not easy to be a materialist and yet believe that there is a way for human beings to survive death. Peter van Inwagen identifies the central obstacle the materialist faces: Namely, the need to posit appropriate “immanent-causal” connections between my body as it is at death and some living body elsewhere or elsewhere. I offer a proposal, consistent with van Inwagen’s own materialist metaphysics, for making materialism compatible with the possibility of survival.

1. Introduction: Peter van Inwagen’s problem for materialist survival

Suppose that the materialist is right about me: I am a physical object, namely the living human body sitting here at my desk. Now consider the fact that this particular physical object would appear to be doomed. It will suffer decay, cease to exist, its parts probably ending up spread all around the world. Do not these two suppositions together imply that I am doomed? That I will suffer decay and cease to exist? If I and the body in question are not two things but one, then whatever fate awaits my body awaits me.

The Christian — at least the Christian who affirms, say, the Nicene creed — is one who “looks for the resurrection of the dead, and the life of the world to come.” Can such a one be a materialist? Can she accept the conclusion of the preceding argument, judging that she will suffer decay and cease to exist — for a time, until “the life of the world to come” begins?

Well, why not? What is supposed to be the big problem about ceasing to exist for a time and then coming back into existence again? Perhaps, at the general resurrection, God collects all the parts of me that are left (or some portion of them if a few have found their way into other people’s bodies to be resurrected with them) and reconstitutes me more or less as I was at my death. Isn’t that enough to bring me back onto the scene?

The primary problem with this and similar scenarios is not that there are obvious objections to the possibility of “gappy existence”. Locke’s principle, that nothing could have two beginnings of existence, is trivially true if taken to mean that nothing could have two earliest moments at which it exists; but it is not at all obvious if taken to rule out the possibility of something’s ceasing to be for a time and then coming back into existence again. The real problem is that it is hard to see how a living body could



come back into existence after *this sort* of temporal gap. For the gap described is one over which there appear to be no causal connections — or at least no very direct ones — passing from the body as it was at death to the body as it will be in the world to come. For God to create a “new me” at that late date — even if He uses mostly old parts salvaged from the wreck of my body — is not for Him to bring *me* back, but to create a mere *replica* of me, a doppelgänger.

Peter van Inwagen makes the point succinctly and forcefully:

The atoms of which I am composed occupy at each instant the positions they do because of the operations of certain processes within me (those processes that, taken collectively, constitute my being alive). ...[I]f a man does not simply die but is totally destroyed (as in the case of cremation) then *he* can never be reconstituted, for the causal chain has been irrevocably broken. If God collects the atoms that used to constitute that man and “reassembles” them, they will occupy the positions relative to one another they occupy because of God’s miracle and not because of the operation of the natural processes that, taken collectively, were the life of that man.¹

I find van Inwagen’s basic contention extremely plausible. In order that a given material object — or any other individual thing, for that matter — persist throughout a period of time, there must be appropriate causal relations between the object as it is at earlier times and the object as it is at later times. Exactly what relations are “appropriate” is, of course, a vexed question. But most metaphysicians seem to agree with van Inwagen that there must be a causal element in any adequate “criterion of identity” for persisting material objects.² Later states of a persisting body must be causally dependent, at least in part, upon its earlier states.

But not just any sort of causal dependence seems sufficient to give us the kinds of causal relations that are crucial to the persistence of a living body. It is not enough, says van Inwagen, that the way my body was at death serve as a mere *blueprint* for God’s creation of a new one at the general resurrection. That is causal contribution of a sort; but here the causal chain passes through God’s mind; it doesn’t remain at all times “immanent” with respect to processes going on inside a living human body. The case is analogous to that of van Inwagen’s monks who claim that God “recreated” an original manuscript in Augustine’s own hand.³ If the original was destroyed in a fire, no document brought into existence later on, by God or anyone else, could literally *be* the original — no matter how precisely similar the two might be.

Does the Christian materialist have any options left? It might seem that she has none, that she is forced either (a) to deny van Inwagen’s thesis about the necessity of direct causal dependencies of the appropriate, “immanent” sort for her persistence, or (b) to deny that she is identical with her body. But I think there are options left — as does van Inwagen.⁴ Abstractly, the only other way out is to deny the second, empirical premise in the problem as I stated it in the first paragraph: Namely, the premise asserting that this body is doomed. Perhaps my body’s future is really not

so grim; perhaps, appearances to the contrary notwithstanding, my upcoming death is not, strictly speaking, the complete and utter destruction of my body after all.

Van Inwagen has suggested one way in which this body could have a brighter future than at first appears: Granted, it seems as if the organic life of my body peters out, and appropriate causal paths end. If this were what really happens, then (van Inwagen insists) setting up some batch of simples later on in such a way that they are alive and constitute an organism resembling me as I was at death would just be starting up a new life, one that is lived by a new organism. But perhaps appearances are deceiving; perhaps God secures my survival by surreptitiously removing my corpse — or at least my brain and central nervous system — and replacing it with a simulacrum at the time of my (seeming) death. At one time, van Inwagen thought this was the only way (consistent with empirical facts) for God to effect my survival.⁵

But the Christian materialist would surely do well to look for a better story than this. I once helped a friend with some of the more laborious steps in the process of taking a human corpse apart.⁶ Opening a human skull and finding a dead brain is sort of like opening the ground and finding a dinosaur skeleton. Of course it is in some sense possible that God takes our brains when we die and replaces them with stuff that looks for all the world like dead brains, just as it is possible that God created the world 6000 years ago and put dinosaur bones in the ground to test our faith in a slavishly literal reading of Genesis. But neither is particularly satisfying as a picture of how God actually does business.

And that provides the motivation for this paper: My goal here is to tell a better “just so” story (consistent with van Inwagen’s version of materialism) according to which God insures that this very body escapes the deadly powers that would otherwise destroy it — and does so without “body-snatching” (that is, without spiriting away any of my body’s parts and leaving behind different matter so that the miracle goes unnoticed). The escape is by a hair’s breadth, effected by a miraculous last minute “jump” that takes me out of harm’s way. So I am tempted to call this story “the falling elevator model of survival” — for you’ll recall that, according to the “physics” of cartoons, it is possible to avoid death in a plummeting elevator simply by jumping out in the split second before the elevator hits the basement floor. I argue that it is consistent with the rest of van Inwagen’s materialistic metaphysics that our bodies do something like that when we die.

And we needn’t add anything too wildly implausible in order to allow for this possibility — at least, nothing implausible that isn’t already present in or required by van Inwagen’s materialism. To establish this last point, I shall have to discuss problems of fission at some length. The goal will be to show that a materialism such as van Inwagen’s cannot avoid a “closest continuer” account of the persistence conditions for persons — that is, van Inwagen must deny what is sometimes called “the only x and y principle.” This is important, since the falling elevator model requires that human persistence conditions include a “temporally closest continuer” clause. Some will insist that adopting a closest continuer theory of personal identity is just as wildly implausible as supposing that God is a body-snatcher — and,

for the record, I am inclined to agree. But, however that may be, I show that a closest continuer account of personal identity is an inevitable corollary of van Inwagen-style materialism.

Although van Inwagen's materialism provides the context in which I develop the falling elevator model of entry into the next life, I am confident that my strategy could be deployed within other theories of persistence, as long as they give pride of place to a causal element in criteria of identity over time. In particular, those who, unlike van Inwagen, accept the thesis that a human being persists by having a different "temporal part" for each time at which she exists will have a somewhat easier time of it. I choose van Inwagen's own metaphysics because he has set the problem for us, and because his theory of persisting living things is probably one of the hardest to square with survival.

Finally, although I tell the story under the supposition of materialism, it remains of some relevance for any substance dualist, like myself, who would like to be able to say that it is this very body which will be reunited with my immaterial soul at the "general resurrection."

2. *Van Inwagen's metaphysics of material beings*

Van Inwagen's account of the nature and persistence conditions of physical objects is found in his impressive book, *Material Beings*.⁷ Here's the *Reader's Digest* condensed version: At bottom, the universe is filled with material simples — tiny particles that have no proper parts. Some of them are arranged table-wise in the center of my study; many more are arranged house-wise around me. However, contrary to what one might initially have thought, the simples arranged in a table shape here do not in fact compose anything, nor do the ceiling-shaped simples hanging over me. Simply heaping simples together is not sufficient to produce an object having them for its parts. Some simples, however, are caught up into a very special kind of event: namely, a Life. A set of objects are caught up in a Life when they are organized in such a way that they work toward insuring the continued existence of successor sets of simples organized in roughly the way they are — they possess a *conatus sese conservandi*, a knack for self-maintenance. The only events in our world that really exhibit this sort of self-sustaining activity are biological (although a particularly stable weather pattern, like a hurricane, is at least a pale imitation of a Life). When a set of objects are caught up in a Life, then there exists an object that is composed of these parts — a living organism. This organism lasts just so long as the event which is its Life continues. And, since there is no other way of organizing a collection of objects so that they compose an object, the world contains nothing but living things and the simples from which they are made.

Self-maintenance, the hallmark of Lives, is an intrinsically causal notion. And it requires a kind of "immanent causation". If matter is organized in one of the ways characteristic of living things, it tends to *directly* bring it about that there be matter organized in roughly the same way. A process that only *indirectly* insures that a certain sort of structure be maintained will not count as a single Life. For instance, a process whereby I have offspring, even offspring as like me as a clone, will not count as a single Life,

since it is, for a time, not an event happening to any living human organism. A process may preserve my body's structure but it won't be a single Life if, for example, it passes through the banks of a Star Trek-style teleporter or a blueprint in the mind of God. Such processes are not instances of true *self-maintenance*. Clearly, it is this component of van Inwagen's metaphysics that makes the possibility of survival so problematic. Since my Life is necessarily a self-perpetuating event, the apparently complete failure of my body to perpetuate itself at my death would seem to assure its demise; once the living structure has been completely lost, say in cremation, an attempt by God or anything else to bring my parts back together to form a living thing cannot possibly result in the continuation of *my* Life.

How does van Inwagen's materialism handle the familiar problems of fission and fusion? What is to be said, for instance, about a Life that splits when a human organism divides in two by means of some fancy brain-splitting surgery? Here I think van Inwagen, like all materialists save certain temporal parts theorists, must give up what is sometimes called the "only x and y principle": roughly, the thesis that facts about events outside the spatiotemporal path swept out by an object could not have made any difference to the question of whether or not a single object passed along that path.⁸ Van Inwagen must allow for at least the abstract possibility of cases of organic fission which break the only x and y principle. Although this will take some showing, it is important that I do so. For the falling elevator model of survival implies that the (antecedently highly plausible) only x and y principle be false. If van Inwagen's materialism should force him to reject the principle anyway, the falling elevator model does not have this implication as an *added* cost.

We know that it is possible for a person to survive the removal of an entire brain hemisphere. And it seems plausible to suppose that "brain transplants" are at least possible in principle, and that in such a case the person goes where her brain goes. Now if my brain were only a little bit different,⁹ then it would seem that I could survive not just the loss of an entire hemisphere, but the destruction of an entire half of my brain; and, given the possibility of brain transplants, the subsequent transplantation of my remaining half-a-brain into a different body. But this raises a familiar, troublesome question: What would happen were my (supposedly) symmetrical brain split in two, each of the halves being transplanted into a separate body? Each of the resulting organisms would have an equally good claim to be continuing my Life — that is, to be me. But they cannot both be me; one thing cannot become two, on pain of contradiction. Now the believer in souls can say that I went wherever my soul went — either with the one half-brain or the other or neither, as the case may be.¹⁰ But what should the materialist say?

Those who believe in temporal parts can maintain that there were two people all along; they simply shared their earlier stages, much as two roads may share a certain stretch of pavement in common. But the opponents of temporal parts, such as van Inwagen himself, must say something else — namely, that, at least in cases of perfectly symmetrical fission, the original organism ceases to be and is replaced by two new ones. And indeed that is what van Inwagen does say.¹¹ But, as shall become apparent, this response

leads inevitably to a “closest continuer” theory of personal identity: the view that whether a given process is a single Life will sometimes depend upon events that are not part of that process.

Here is what van Inwagen actually says about fissioning Lives. First, he sets up a “best case scenario” for fission. Imagine an intelligent but amoeba-like creature — call it “Neocerberus” — with two “brains” corresponding rather closely to our two hemispheres. Each brain is the seat of reasoning, of the processing of sensory information, and of Neocerberus’s other “higher” mental functions. One thing these brains don’t do is direct any of the homeodynamic activities of the body — they exercise no control over metabolism, antisepsis, respiration, pulse rate, and so on. These activities are governed by two “organs of maintenance,” similarly paired. Like our two hemispheres, the two brains send messages back and forth by means of a commissure; and the two organs of maintenance are similarly linked. But unlike our hemispheres, which only imperfectly mirror one another’s activity, the two brains are practically mirror images of one another, and likewise for the two organs of maintenance. Each works with its partner to stay in roughly the same state, so that each sends out the same signals to the rest of the amoeba-like body. Consequently, both conscious bodily movements and unconscious regulation of homeodynamic processes are overdetermined — each brain and each organ of maintenance sends a message which would have been sufficient by itself to bring about the bodily change in question.

Van Inwagen allows that the activities of Neocerberus’s brains, organs of maintenance, and other parts, constitute a single life; Neocerberus is a living, thinking individual, while its left half and its right half are not. Given the substantial doubling up of functions in our own twin hemispheres, it would be a dangerous thing to deny the possibility of there being an individual like Neocerberus. But then van Inwagen must face the following question:

[S]uppose we surgically divide Neocerberus right down the middle. We suppose that his vital organs — pumps, glands, and so on — are symmetrically distributed, and that lesions in Neocerberus’ outer integument heal almost instantly. When this is done, we shall obviously have two organisms. What is their relation to Neocerberus? You [i.e., van Inwagen], I think, must say that neither is Neocerberus. You must hold that two new organisms have come into existence, and that Neocerberus ceased to exist at the moment it became true that the simples that had composed him began to compose two organisms. Call the two new organisms Alpha and Beta. Brain 1 is a part of Alpha...and brain 2 is a part of Beta.¹²

And van Inwagen accepts this conclusion: fission would mean the death of Neocerberus; its Life is over, and two new Lives begin.

Does this automatically make van Inwagen a closest continuer theorist, a denier of the only *x* and *y* principle? Not necessarily. For he could say that, even if brain 2 and its corresponding organ of maintenance had been simply “removed by destruction,” as it were, that would have ended Neocerberus’s

life. He could then claim that it is not the mere presence of a competitor that keeps Neocerberus's Life from following the spatiotemporal path traced out by Alpha (or Beta). And this is just what van Inwagen does say.

So what is so bad about the removal by destruction of Neocerberus's right or left half? Why could it not survive such a loss? The event which Neocerberus could not survive is not, on van Inwagen's view, the loss of one of the *brains*. That, he thinks, is perfectly possible — just as we humans can survive the loss of a hemisphere. What Neocerberus cannot survive is the loss of one of the *organs of maintenance*. Destroy one, or separate the two, and Neocerberus dies.

But why would the destruction of one of these organs automatically "kill" Neocerberus? After all, the rest of the organism could get along just fine without it, since all its signals are duplicated by the other organ. Destruction of the Beta organ of maintenance, says van Inwagen, "ends Neocerberus' life because it destroys one of the two 'organs of maintenance' that had been directing that life. The resulting life is a new event, distinct from Neocerberus' life because it had different causes from Neocerberus' life. It is in fact Alpha's life, and the resulting organism is...Alpha."¹³

This strategy for avoiding the closest continuer theory ceases to be feasible, however, as soon as a broader range of possible organisms is considered. Take Leftycerberus, for example, an organism only slightly different from Neocerberus. Both of its organs of maintenance are more or less in synch, but the left one is a little faster than the right in sending electrical impulses to the rest of the body; and the first signal to arrive always preempts the slower signal, preventing it from causing changes in respiration, pulse rate, and so on. In this case, the right-hand organ of maintenance *isn't* among the causes of Leftycerberus's Life; and so, according to van Inwagen's reasoning, it can be removed without bringing Leftycerberus's Life to an end. But let's tinker a bit with Leftycerberus. What if its right organ were sometimes successful and sometimes not? What if, for each electrical impulse sent, there were a fifty-fifty chance that the one and not the other would succeed? Perhaps the most "realistic" scenario would be something like this: Leftycerberus's dual-organ system has evolved in order to provide the organism with a "back-up" in case one of its organs of maintenance runs into trouble. Then switching off might be common; when one becomes tired, the other picks up speed and wins all duels for awhile.

What would van Inwagen say about such a creature? To be consistent with what he says about Neocerberus, it would seem that he must say something like this: whenever one organ of maintenance is, for a time, the sole cause of the changes it tries to direct, then it cannot give up any of its control to the other organ of maintenance without one Life coming to an end and a new one beginning. To pass on control would be to produce a Life with "different causes." But how plausible is that? Control of my heart rate can be taken over by a pacemaker without my ceasing to be. Why couldn't Leftycerberus's heart rate alone, say, be taken over by its right organ of maintenance without the poor thing's ceasing to be? For that matter, couldn't I survive the artificial control, at least for a short time, of all sorts of bodily functions — the systolic being only the most obvious example? If so, why couldn't the left organ pass some or even all of its

duties to the right organ for a while? There seems no reason to deny that an organism such as Leftycerberus could survive such shifting of control. Only a desperate resolve to save the only x and y principle at any cost could motivate such a denial.

But if van Inwagen were to allow the possibility of a Leftycerberus, he would have to admit that such a creature *could* survive the removal of one of its organs of maintenance. Suppose the left organ has passed on its duties to the right. Then we remove the left organ, leaving the right one to carry on by itself. Leftycerberus's Life need not come to an end, at least not for the reason van Inwagen originally gave — that is, because the post-op Life now being directed by the right organ has different causes. Removing the left organ doesn't change the causes of the Life that's going on in this situation. So Leftycerberus can survive the destruction of one organ of maintenance and (van Inwagen has already allowed) the destruction of the corresponding brain. Suppose it's the left organ of maintenance and brain 1 that are destroyed. In that case, there's a Life which involves both of these for a time (along with brain 2 and the right organ), and then is continued by brain 2 and the right organ on their own. Call this process "Life 1." Now what happens in true fission? What happens if brain 1 and the left organ are removed not by destruction, but by their breaking away to constitute a mirror-image organism? I have argued elsewhere that the materialist who eschews temporal parts has no choice but to regard a perfectly symmetrical fission as the end of the original individual;¹⁴ and van Inwagen seems to agree. So Leftycerberus can't survive this episode. And yet, the process I called "Life 1" is still there, just as it was before — or at least, a process intrinsically just like Life 1, involving all the same particles doing all the same things. This process was, in the absence of competitors, sufficient for Neocerberus's survival. But, when a competitor is present, it is not. And so, to retain its plausibility, van Inwagen's account of organism identity is forced into the denial of the only x and y principle.

I am convinced that *any* materialism concerning human beings that eschews temporal parts can be driven in similar fashion toward a closest continuer account of human persistence conditions. Such materialists cannot avoid saying that, if there are two simultaneously existing and equally good candidates for being involved in the same Life as some earlier person; then the original person ceases to exist, her Life ends, and two new Lives begin. But if one of the two candidates had been completely absent (destroyed at the point of fission instead of being preserved alive), then the original Life would have continued and the original person would have persisted through the loss of half her brain.

I shall shortly need a little more information about how to trace Lives through branchings. The principle I will appeal to is this: If you are looking for the next event in a given Life, and the present event is causally connected in the appropriate, immanent way to two nonsimultaneous later events, but one is earlier than the other, go to the earlier of the two — it is the earlier one that represents the continuation of this Life, and the subsequent appearance of the later one does not turn this into a case of fission. I shall be assuming, then, something like a "temporally-closest continuer" theory of persistence conditions.

3. Lives with spatiotemporal gaps

Suppose that van Inwagen's notion of a Life does constitute the proper way to trace the careers of human beings; and that, when there is branching, it is the temporally-closest branch (if there is one) that continues the original Life. I think we can still make sense of an afterlife without having to suppose that God is a secret body-snatcher — someone who invisibly removes bodies or body-parts at death, replacing them with lookalikes. Here's one way:

On van Inwagen's view of human persistence, as on many others that emphasize a causal component in personal identity, if someone has persisted into the present, then his existence in the immediate past must not be causally irrelevant to his having lasted until now. For instance, the fact that I am presently standing here must be at least partly causally explicable in terms of the fact that I was standing here a moment ago; for if the body standing here then had no causal connections with the body here now, then the latter is not a continuation of the old one but a replacement that just happens to resemble the old one a good deal. This follows from van Inwagen's thesis that Lives are self-sustaining events; but it is often advanced as part of a larger metaphysical thesis, one that is sometimes put in this way: it is necessary that the stages of a single individual thing (animate or inanimate) be connected by "immanent causality."¹⁵

The role of immanent-causal relations among the stages of a persisting thing is most often discussed within the context of a metaphysics of temporal parts. David Armstrong, for instance, notes that "preceding phases of a thing are a necessary part of the total cause which brings the succeeding phases to be."¹⁶ For Armstrong, the "phases" in question are temporal parts; but one may emphasize the importance of immanent causation without accepting the doctrine of temporal parts. This can be seen most clearly by considering different views about the nature of causal relata. Let us assume, for simplicity, that conditions, states, and events together constitute one big category of causal relata, all of which may — with some stretching of ordinary usage — be called "events". It is generally agreed that objects only enter into causal relations derivatively by having causally efficacious events happen to them. For instance, the baseball's breaking the window is really a matter of a set of events C causing another event e — where C will include the event of the baseball's hitting the window with such-and-such a velocity, the "event" of the window's being made of a certain kind of glass, etc., and e is the window's breaking.

Although Armstrong's way of describing immanent causation seems to presuppose a theory of events according to which (at least some) events are temporal parts, surely it is possible to agree with Armstrong about the importance of causal connections in persistence conditions while withholding commitment to a metaphysics of temporal parts.¹⁷ The target thesis about immanent causation can be put in metaphysically neutral terms. First, we define "temporal stage of an object" as a kind of complex, comprehensive event:

- (D1) s is the temporal stage at t of an object $x =_{df}$ there is a set R of all the intrinsic properties x has at t , and s is the event of x 's exemplifying R at t .

If a property-exemplification theory of events is correct, then temporal stages as defined by (D1) are not temporal parts.¹⁸ But if some of the friends of temporal parts are correct, then such comprehensive exemplifications of properties may in fact be identified with the temporal parts of things; in which case temporal stages *are* temporal parts. However this dispute about the correct theory of events turns out, (D1) can be used without prejudice to either view to express Armstrong's thesis about immanent causation.

Formulating a more precise statement of Armstrong's claim about immanent causation is complicated by the fact that, since time is a continuum, for any momentary stage which has previous stages among its partial causes, there is no *single* previous stage. What one should say, I think, is that, for an object that persists throughout a given period of time, the way the object is at any moment in that interval must be partially determined by the way it was during the interval leading up to that moment. This yields the following sort of principle:

- (IC) Necessarily, if a physical object x persists throughout an open temporal interval T , then for every instant t in T there is an open interval of time T^* with t as its point-limit such that the sum of x 's temporal stages that exist during T^* is a partial cause of x 's temporal stage at t .¹⁹

Many metaphysicians seem to agree that something like (IC) must be true, and that immanent-causal relations among stages are much more central to the persistence conditions of physical objects than relations of spatiotemporal contiguity among stages.²⁰ Furthermore, the notion that spatiotemporal continuity of stages is not even necessary for persistence is a natural enough view. Why suppose that things cannot jump discontinuously from one place to another, or flicker out of existence for a while only to re-emerge elsewhere and elsewhere?²¹ Armstrong sums up the relationship between spatiotemporal continuity and immanent causation succinctly: "Spatiotemporal continuity of phases of things appears to be a mere result of, an observable sign of, the existence of a certain sort of causal relation between the phases."²²

(IC) does not rule out the possibility of discontinuous spatiotemporal jumps for objects, or even of "temporally gappy" objects; it merely describes a condition that applies to periods of time *throughout which* an object exists. If immanent-causal connections are indeed necessary for persistence, then if it is possible for an object to persist through temporal gaps during which it has no stages, there must be suitable immanent-causal relations which cross the temporal gap between earlier and later stages. The statement of a more general condition allowing for this possibility is complicated, once again, by the fact that (time being continuous) an intermittently existing thing would seem capable of having an "existence gap" that is either open or closed on both ends, or else open on one end and closed on the other.²³ In the case of a thing x that goes out of existence for an open interval T between t and t^* , we should say that it is a necessary condition of x 's persistence over this gap that x 's temporal stage at t is a partial cause of x 's temporal stage at t^* . And we should add that at no time during the gap is there a set of conditions sufficient by itself for the occur-

rence of x 's temporal stage at t^* . To allow that would be to allow that immanent-causal connections could pass through the circuitry of the *Enterprise's* transporter or the mind of God; and, on van Inwagen's account of Lives, such causal connections are not sufficiently "immanent" to preserve sameness of Life (and, with it, sameness of living body). Similar conditions may be formulated for the three other sorts of existence-gaps.

Assuming, then, that the kind of immanent-causal connections that normally preserve a Life could cross spatial and temporal gaps, there's no reason to think that one and the same Life could not contain spatial jumps or temporal gaps. As long as the causal processes from earlier stages to later stages are of the right sort, preserving the self-sustaining structure peculiar to the living thing in question, one has the same Life. If, for instance, every particle in my body were disposed at a given time to (discontinuously) "jump" precisely one yard in a certain direction, then my body would sustain itself over a discontinuous jump of one yard as well.

Of course the supposition that causal processes can be spatiotemporally gappy in this way is contentious. But it should be much less so than it once was, for the following reasons: there is no a priori reason to think it is impossible, and some a posteriori reason to think it happens; the theories of causation which imply that it is impossible have been exploded; and the most promising theories still in the water can accommodate it. I can give only the briefest survey of these points here.

One species of gappy causal process is what Russell called "mnemonic causation" — "that kind of causation...in which the proximate cause consists not merely of a present event, but of this together with a past event."²⁴ He concludes that there is "no a priori objection to a causal law in which part of the cause has ceased to exist."²⁵ But what *are* the supposed a priori objections to causally direct action at a spatial or temporal distance? The traditional one was just that "a thing cannot act where it is not"; and so an event cannot cease to be before its effect comes into existence or directly bring about an effect at some spatial distance. But this line of reasoning quickly leads to the conclusion that all causation must be simultaneous, and that a cause and its effect must occupy the very same spot — and how, then, is the propagation of causal processes possible? This result constitutes a near reductio of the primary source of the a priori objections to mnemonic and otherwise gappy causation.

On the a posteriori side in favor of direct causation across spatiotemporal gaps, there is Bell's inequality, verified by Aspect's experiments, which suggests that either there is faster-than-light signaling at the quantum level, or else there are nonlocal causal influences at work. Of course I cannot pretend to know how the paradoxes of quantum mechanics will ultimately be resolved (if indeed they ever will be, to everyone's satisfaction). But all I wish to point out here is this: nonlocal causal processes are a serious contender for explaining certain very mysterious physical phenomena; and many of those who have thought hardest about these matters take the possibility seriously. Unless we metaphysicians have some very powerful a priori arguments against gappy causal processes (and, as I said, I think we don't), we had better stop insisting that they're impossible.

True, some philosophical theories about the nature of causation straight-

forwardly imply that cause and effect must be at least spatiotemporally contiguous, if not coincident. Most notably, contiguity of cause and effect is built into the theories of Hume and C. J. Ducasse. But, by my lights, the critics of these views have won: causation is more than just constant conjunction and spatiotemporal contiguity; and the cause of a given effect cannot be defined in Ducasse's way, either — as, roughly, the sole change occurring right before the effect and in its immediate environment.²⁶ What theories of causation are still afloat? There is a bewildering variety, but most of the real contenders have room for gappy causal processes. There are purely singularist accounts, like Elizabeth Anscombe's,²⁷ that simply take the causal relation as fundamental and unanalyzable; given the simplicity of the causal relation on such a view, the impossibility of causation over gaps could hardly *follow* from the thesis. There are counterfactual analyses, like David Lewis's;²⁸ and nothing in such accounts prohibits counterfactual dependencies of the right sort between events that (a) have spatiotemporal gaps between them, and (b) have no other events between them capable of taking up the causal slack. A number of theories posit some sort of intrinsically causal persisting process or thing as a primitive notion, and use it in the analysis of causal relations among events. Wesley Salmon, for instance, takes "causal processes" as basic — causal processes being spread out in space-time, and (unlike mere "pseudo-processes") capable of transmitting signals or bearing a mark.²⁹ Most recently, Douglas Ehring has suggested that the "singularist element" that links a cause to an effect is the persistence of a "trope," a property-instance that is part of the cause and endures as part of the effect.³⁰ Like the simpler singularism of Anscombe, theories like Salmon's and Ehring's cannot in any straightforward way *imply* the spatiotemporal continuity of causal processes, or the contiguity of cause and effect. Since the notion of a causal process or a persisting trope is taken as a primitive, there can be no analytic requirement that such things exhibit spatiotemporal continuity.

These are, in brief, the reasons it seems to me to be sensible to suppose that mnemonic or otherwise gappy causation is possible. And given that it's possible, then, whatever the likelihood of its occurrence in the ordinary course of nature, gappy causation remains a tool that God might use to effect the preservation of this living body. Is such causation *necessary* in order for God to secure my body's survival without body-snatching? Perhaps not; for, in the final section, I shall suggest that, even if there be some sort of hidden impossibility here, there remains a less problematic sort of "quasi-causal" dependence that could cross spatiotemporal gaps and be used by God to insure my survival.

If we can make sense of immanent-causal connections over spatiotemporal gaps, then we are well on our way to an account of survival without body-snatching. Suppose my body were to undergo an extraordinary and discontinuous case of fission: every particle in my body at a certain time t is immanent-causally connected with two resulting particle-stages after that time. The two sets of resulting particles appear at some later time t^* in disjoint spatial regions, and each is arranged just as the set of "parent" particles that produced it; what's more, they are so arranged *because* the original particles were so arranged — for each particle produces its "offspring" at precise-

ly the same distances and directions as every other particle, insuring duplication of my body's overall structure. My body, in this case, replicates itself over a temporal gap. Given the solution to fission cases advocated above, we must say that this event brings my life to an end. But now suppose that the same sort of fissioning of each particle occurs, but that only *one* set constitutes at t^* a living human body structured just like mine; the other set appears at t^* as an unstructured pile of dead matter. Perhaps many of the particles failed to "send" one set of "offspring" to the right place, so that the particles that appear on one side are not arranged just like the original set of particles. Then, thanks to the failure of one body to "take," my life is continued by the successful candidate that appears after a temporal interval.

Now we have a model for how God may resurrect this very body: He does so by, just before it completely loses its living form, enabling each particle to divide — or at least to be immanent-causally responsible for two resulting particle-stages. One of the resulting particle-stages is right here, where the old one was; another is either in heaven now (for immediate resurrectionists), or somewhere in the far future. But in any case, since the set of particle-stages on earth that are immanent-causally connected with my dying body do not participate in a Life, there is no danger of my "fissioning out of existence" due to competition with my corpse. My corpse is not even a *candidate* for being me, since it does not participate in a Life. In fact, on van Inwagen's view, there *is* no such object — it's just a collection of particles that doesn't add up to anything. But whether or not the corpse is a single thing, it could not be identical with the living organism that was here just prior to my death, since organisms are essentially *living* things. Furthermore, if the ultimate simples in my body are the kinds of things that can last through time (some talk as though quantum mechanics rules this out), it will turn out that each simple which God "zaps" with this replicating power in fact does not *itself* divide, but simply remains right here — as a part of my corpse. Each particle x is immanent-causally connected to two streams of later particle-stages; one of them — the one in the here and now — includes stages of x itself; the other, the one in the hereafter, consists of stages of a different particle. Unlike a case of fission in which the fission-products co-exist, the case of the future-replicating individual particle involves only one resultant particle now; so, in the present there is no other candidate to threaten the continued existence of the original particle — there is only one "temporally-closest continuer" for each particle.

The diversity of the particles I'll have after death from the particles in my dying body does not, however, prevent the *bodies* from being the same. All that matters for the continuation of my Life is that the right kind of life-sustaining causal continuity obtain among person-stages. In fact, if I'm made entirely of particles that are bosons or fermions (as seems to be the case), then there is reason to doubt whether my body can *ever* be said, strictly speaking, to consist of the same particles from one moment to the next. For fermions and bosons obey statistical laws which lead many to say that they "lack individuality."³¹ But whether or not the ultimate simples in my body persist, the atoms and molecules in my body as I die will all still be here, heaped up on the floor as parts of my corpse. For the causal relations normally sufficient to preserve atoms and molecules will

obtain between the pre- and post-death atoms and molecules; and, as long as the only competitor for being this or that molecule is something that appears in the future, there are no competitors here and now.

Thus we have a story that includes everything we want: The heap of dead matter I leave behind is made of stuff which really was a part of my body (it is not a simulacrum; God is not a body-snatcher), and the resurrected body is really identical with this present one — it is causally continuous with it in just the way adjoining stages of my present body are causally continuous, except that in this case there is a spatial or spatiotemporal gap which my poor body was given the power to cross by means of God's intervention.

4. *Objections and replies*

Objection: What if God had given my particles this replicating power back at the end of my 20th year, so that at that time they were immanent-causally connected both with a living duplicate in the hereafter as well as with succeeding spatiotemporally continuous 21-year-old body-stages in the here-and-now?

Reply: I answer just as in the particle case. Since there is no rival candidate for me in existence immediately after the last 20-year-old person-stage, my life continues in the ordinary way — the ostensibly 20-year old “resurrected” replica of me is just that, a replica of “the me that used to be.” One only faces fission when a life divides into two co-existing (and therefore competing) streams.

Objection:³² If my body reappears exactly as it was right before my death, then the first thing I will do when I get to heaven is die. And that's not much to look forward to!

Reply: The simplest response is to point out that, right up to the moment of my death, it remains possible for God to miraculously heal my body, preserving my life by fixing an organ that isn't functioning, kick-starting a process that has stopped, or holding together bits of me that are flying apart. As long as His miraculous interference is not too extreme (not, for instance, the instantaneous replacement of every cell in my body with a new cell specially created on the spot), He would be *healing my body* and not just *replacing it* with a simulacrum. If He could have worked such a miracle at any point up to the moment of my death, then He could surely do it as soon as my body reappears — so quickly, in fact, that neither I nor any other (normal human) witness would notice that my body was, for a moment, in bad shape. But there are sure to be other ways around this problem; for instance, the extraordinary causal powers given to the particles of my dying body could be tampered with slightly, so that some of their results in the hereafter are not *precisely* what one would have expected given their organization at my death.

Objection: You have spoken blithely of God “zapping” material parti-

cles to give them replicating power; but I suspect there is a deep impossibility lurking here. On my view, it is *essential* to an object that it have all of the most fundamental causal powers it actually has, *and no more*. But then the replicating power you posit could not be foisted on a thing from “outside” — to do so would be to violate its very nature.

Reply: Although I am suspicious of your rigid theory of causal powers, I can respond to your objection without denying your theory. Particles in the here-and-now can mnemically-cause — or at least mnemically-“quasi-cause” — particles in my resurrected body without the introduction of foreign powers. The chief difficulty to be avoided in a materialist theory of survival is the severing of direct causal dependence between the heavenly person-stages and the dying person-stages. If the body appearing in the hereafter is the way it is *not* primarily because of the way my body was at death, but as a direct result of God’s creative act, then the required immanent-causal connection is broken. The important question here is whether, at the time of resurrection, there are causally sufficient conditions in existence for the appearance of a body of precisely this sort; or whether the causally sufficient conditions must be extended back to include the state of my body at death. In the former case, survival is in jeopardy. But in the latter case, the falling elevator model is off the hook.

Fortunately, it is fairly easy to see how God could issue a decree that would produce a body just like mine was at my death, without at the same time precisely determining the characteristics of the body that appears. God’s part in resurrecting me — His decree — could be extremely limited in its content. If his decree is appropriately limited, the particular structure exemplified by the resurrected body will depend directly upon a past existent: Namely, the temporal stage of my body at the time of my death.

I propose that we think of God’s creative acts on the order of the carrying out of a king’s commands. There are, of course, big differences. A king has authority to issue decrees; but his orders (at least the significant ones) can only be carried out by means of causal intermediaries, whereas God need only give the command and it is so. Still, the comparison proves illuminating. Consider Frederick the Great, issuing one of his whimsical decrees: “Let the tallest man in the kingdom be brought before me!” And his messengers scour the kingdom measuring people, in search of a man taller than all the others. Assuming there are not two or more equally tall men taller than all others, there is a certain state of affairs that would represent the fulfillment of Frederick’s decree. If Jones happens to be the tallest man in the kingdom, it is: Jones’s standing before the king. But if Robinson had been an inch taller, or Jones an inch shorter, a different state of affairs would have satisfied the king’s order. Clearly, the result of the king’s command in this case depends on more than just its content; it also depends upon facts about the heights of the men in his kingdom.

Now suppose God’s command at the general resurrection is limited in something like the way Frederick’s “Find the tallest man” is limited. Suppose God says: “Let there be a body which is just like Zimmerman’s was at his death.” The precise nature of the body that appears will *not* be determined by the content of God’s decree — or by any other set of condi-

tions that exist then.³³ There is no blueprint in God's mind specifying my body's former states, a blueprint that figures in his act of creation. Rather, the nature of the body depends entirely upon what my final bodily stage was like. This seems to me to represent, if not genuine mnemonic causation, at least a kind of mnemonic quasi-causal dependence. In particular, it is, I believe, sufficient to address van Inwagen's worry that the particles in any ostensibly resurrected body "will occupy the positions relative to one another they occupy because of God's miracle and not because of the operation of the natural processes that, taken collectively, were the life of that man." What the new body is actually like in its details depends upon what the original body was like, and not upon the will of God — at least not upon the particular act of will that is involved in this particular miracle.

The bite of van Inwagen's original dilemma comes from our feeling that a body put together in such a way that its every feature depends entirely upon God's action at the time he creates it could only be a *replica* of me. But the details of the body that results from the very limited divine decree I've described would *not* depend upon the particular activity God engaged in then; they would depend instead upon the states of my body at death. The fact that the dependence in question is not ordinary causal dependence is, I think, beside the point — what's needed is simply a way for the intrinsic states of the heavenly body to depend upon those of the earlier one *directly*, that is, without passing through intermediate conditions sufficient themselves to explain the heavenly body's structure. And this has been done. There is no causal process that passes outside every living human body and provides a sufficient explanation for the heavenly body's existence and intrinsic nature. The chain of dependence (in this case, quasi-causal dependence) going backwards from the initial state of the heavenly body remains "immanent" with respect to a living, human organism — namely, my body.³⁴

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NOTES

1. Van Inwagen, "The Possibility of Resurrection," *International Journal for Philosophy of Religion* 9 (1978), pp. 114-121; reprinted (with postscript) in *Immortality*, ed. by Paul Edwards (New York: Macmillan, 1992), pp. 242-246; reprinted again (with longer postscript) in van Inwagen, *The Possibility of Resurrection and Other Essays in Christian Apologetics* (Boulder, Colorado: Westview Press, 1998), pp. 45-51. My references are to this last volume; the passage quoted in the text is from p. 47.

2. The arguments producing this agreement, due to David Armstrong and others, are discussed in the sequel.

3. Cf. van Inwagen, "The Possibility of Resurrection," pp. 45-46.

4. Cf. van Inwagen, "Dualism and Materialism: Athens and Jerusalem?," *Faith and Philosophy* 12 (1995), pp. 475-88; and the "Postscript (1997)" to "The Possibility of Resurrection," pp. 49-51.

5. "The Possibility of Resurrection," p. 246. More recently (in a postscript added in 1997), van Inwagen has said that "there may well be other ways in which an omnipotent being could accomplish the Resurrection of the Dead"

apart from literal “body-snatching” — “ways I am unable even to form an idea of because I lack the conceptual resources to do so” (“The Possibility of Resurrection,” p. 50). The present essay can be seen as an attempt to augment van Inwagen’s conceptual resources in such a way that he *is* able to form an idea of one or two of the ways God might do this.

6. The friend was not a mobster, but a student of anatomy. Saddled with a lazy lab partner, she recruited my wife and me to assist.

7. Ithaca: Cornell University Press, 1990.

8. Harold Noonan introduced the expression “only *x* and *y* principle.” David Wiggins was after something of the same sort with his “only *a* and *b* condition.” See Noonan, “The Only *x* and *y* Principle,” *Analysis* 45 (1985), pp. 79-83; and Wiggins, *Sameness and Substance* (Cambridge, Mass.: Harvard University Press, 1980), pp. 95-96. For related discussions, see Mark Johnston, “Fission and the Facts,” in James Tomberlin (ed.), *Philosophical Perspectives* 3, Philosophy of Mind and Action Theory (Atascadero, Cal.: Ridgeview, 1989), pp. 369-97 (see esp. pp. 378-82); and my “Criteria of Identity and the ‘Identity Mystics,’” *Erkenntnis*, 48 (1998), pp. 281-301.

9. That is, if it were more like that of van Inwagen’s Neocerberus; cf. *Material Beings*, pp. 202-203.

10. Richard Swinburne turns the fact that the believer in souls can say this into an argument against materialism; cf. “Personal Identity: The Dualist Theory,” [an excerpt from *Personal Identity*, by Swinburne and Sydney Shoemaker (Oxford: Blackwell, 1984)], in *Metaphysics: The Big Questions*, ed. by Peter van Inwagen and Dean W. Zimmerman (Oxford: Blackwell, 1998).

11. Cf. *Material Beings*, pp. 205-207.

12. *Material Beings*, p. 203.

13. *Material Beings*, p. 208.

14. Cf. “Immanent Causation,” in James Tomberlin (ed.) *Philosophical Perspectives* 11, Mind, Causation, and World (a supplement to *Noûs*) (Oxford: Basil Blackwell, 1997), pp. 433-71; cf. esp. pp. 454-455.

15. The *locus classicus* on immanent causation is W. E. Johnson, *Logic*, Part III (Cambridge: Cambridge University Press, 1924), Chapters 7-9. For a more recent discussion, cf. my “Immanent Causation.”

16. D. M. Armstrong, “Identity Through Time,” in Peter van Inwagen (ed.), *Time and Cause* (Dordrecht: D. Reidel, 1980), pp. 67-78; quoted passage occurs on p. 75.

17. Both sides in the dispute over temporal parts are willing to agree that, for instance, “a dog at an earlier moment will be ‘structurally similar to and play a significant role in the production of’ the dog at a later moment” (Frederick Doepke, “Identity and Natural Kinds,” *Philosophical Quarterly* 42 (1992), pp. 89-94; Doepke is quoting Andrew Brennan, *Conditions of Identity* (Oxford: Clarendon Press, 1988), pp. 26-27 — Doepke is an opponent of temporal parts, Brennan a proponent).

18. On property exemplification accounts of events, an event is the having of a property by a thing at a time (for property exemplification theories, compare Jaegwon Kim, “Events as Property Exemplifications,” reprinted in his *Supervenience and Mind* (Cambridge: Cambridge University Press, 1993), pp. 33-52; and Roderick M. Chisholm, “Events without Times: An Essay on Ontology,” *Noûs* 24 (1990), pp. 413-428); to identify such an entity with a temporal part would imply that temporal parts *happen* to some more fundamental substance. And this is something temporal parts theorists would be unlikely to accept — unless the thing to which the events happen is, perhaps, a region of space-time.

19. I offer an analysis of the notion of “partial cause” in “Immanent

Causation," pp. 445-449.

20. Cp. the discussions in D. M. Armstrong, "Identity Through Time," pp. 74-76; Sydney Shoemaker, "Identity, Properties, and Causality," in his *Identity, Cause, and Mind* (Cambridge: Cambridge University Press, 1984), pp. 234-260; and Chris Swoyer, "Causation and Identity," *Midwest Studies in Philosophy* 9, Causation and Causal Theories, ed. by Peter A. French, Theodore E. Uehling, Jr., and Howard K. Wettstein (Minneapolis: University of Minnesota Press, 1984), pp. 593-622. Armstrong and Shoemaker both propose thought-experiments designed to show that tracing a continuous spatio-temporal path is neither necessary nor sufficient for something's being a persisting object (cf. D. M. Armstrong, "Identity Through Time," p. 76; and Sydney Shoemaker, "Identity, Properties, and Causality," pp. 241-48). Imagine demons (Shoemaker introduces annihilation and creation machines, while Armstrong prefers deities) who can annihilate or create human beings at will. If one destroys me at t (i.e., makes t the first moment of my non-existence), while another creates a physical and psychological duplicate that takes my place at t (i.e., makes t the first moment of my duplicate's existence), then the series of stages traces a spatio-temporally continuous path. But suppose the demons are not working in concert, so that the duplicate appears in just that spot with just my physical and psychological make-up utterly by chance. In this case my temporal stages before t have absolutely no causal relevance to the stages of my replacement. He would have come into being there at t whether or not I had ever existed, we may suppose. Clearly, in this situation, I died and something else took my place. So spatio-temporal continuity by itself is not sufficient for persistence. Eliminate immanent-causal connections among stages, and all you have are distinct objects replacing one another.

21. Some scientists talk as though certain sub-atomic particles *actually* move discontinuously, and some suggest that matter absorbed by a black hole may emerge at a distant location in space-time without having traversed any intervening locations. Whatever we think of the evidence for such claims, there seems nothing straightforwardly unintelligible or utterly impossible about them. (Chris Swoyer mentions the black-hole example ("Causation and Identity," p. 598)).

22. D. M. Armstrong, "Identity Through Time," p. 76.

23. For a discussion of similar problems, cf. Philip Quinn, "Existence Throughout an Interval of Time and Existence at an Instant of Time," *Ratio* 21 (1979), pp. 1-12.

24. *The Analysis of Mind* (London: George Allen & Unwin, 1921), p. 85.

25. *The Analysis of Mind*, p. 89.

26. For Ducasse's theory, see his "On the Nature and Observability of the Causal Relation," reprinted in Ernest Sosa and Michael Tooley (eds.), *Causation* (New York: Oxford University Press, 1993); for some of the standard criticisms of Humean analyses and Ducasse's theory, see the editors' introduction.

27. "Causality and Determination," reprinted in Sosa and Tooley, *Causation*.

28. "Causation," reprinted in Sosa and Tooley, *Causation*.

29. "Causality: Production and Propagation," reprinted in Sosa and Tooley, *Causation*.

30. *Causation and Persistence* (New York: Oxford University Press, 1997).

31. For a simple-minded discussion of the quantum-statistical reasons for thinking such particles don't persist, see my "Immanent Causation," pp. 459-461.

32. This objection was put to me by David Lewis.

33. One factor that does exist then and is in danger of helping to determine

the details of my heavenly body-stages is God's (necessarily infallible) beliefs about how my body was at death. But these beliefs are what they are because of how my body was, and not the reverse; and, let us suppose, they do not determine the content of God's decree or in any other way figure causally in bringing me back.

34. Portions of this paper appear under the title "Materialism and Survival" in *Philosophy of Religion: The Big Questions*, ed. by Eleonore Stump and Michael Murray (Oxford: Basil Blackwell, 1998). Ancestors were read at the Pacific Meeting of the APA (1995) and at Franklin and Marshall College. I received good criticism and advice on both occasions. I thank Trenton Merricks, Andrew Cortens, David Lewis, and David Armstrong for particularly helpful comments. Two referees for this journal (one has since identified himself as Bill Hasker) also supplied me with useful criticisms, which I have tried to take into account; as a result, the paper is, I hope, much better organized than it once was, and now addresses worries about immanent causation which many readers may share — although I suspect I have not done enough to fully satisfy at least one of the referees on this last score.