

## TEMPORAL PARTS AND IDENTITY ACROSS TIME

1. Many philosophers think that “What is identity across time?” is an important and meaningful question. I have a great deal of trouble seeing what this question might be. But, very often, if one cannot understand a philosophical question, one’s best course is to look at some alleged answers to it; sometimes these answers enable one to see what question it is that they are offered as answers to. The following passage by Michael Tooley is supposed to provide an answer to the question we are trying to get at.

[W]hat does it mean to say, for example, that the book on the table at time  $t$  is identical with the book on the chair at time  $t^*$ ? One answer is that it means that the object referred to by the expression ‘the book on the table at time  $t$ ’ is the same object as that referred to by the expression ‘the book on the chair at time  $t^*$ ’. But one need not rest with this superficial account, since one can go on to ask what is meant by ‘the object referred to by the expression “the book on the table at time  $t$ ”’. And one very natural answer is this. The expression ‘the book on the table at time  $t$ ’ picks out a certain spatially and temporally limited part of the world, and it does so either by picking out an instantaneous slice, of the book variety, which exists at time  $t$ , or else by picking out a relatively small non-instantaneous temporal part, of the book variety, which occupies a small interval containing time  $t$  and then by linking this up with all other slices (or parts) of the relevant sort which stand in a certain causal relation to the slice (or part) existing at (or around) time  $t$ .<sup>1</sup>

Let us examine this answer carefully. I shall write as if Tooley accepted his “one very natural answer,” since this answer encapsulates a point of view I wish to examine and it will be convenient to have someone to attribute it to; if Tooley is not fully committed to this answer, I apologize to him for taking this liberty.<sup>2</sup>

There are two important theses on display in this passage. One is a thesis about the existence of certain objects, and the other is a thesis about the relation of certain phrases in our language to those objects. The first thesis is that there are such things as ‘temporal parts’ or ‘temporal slices’. (The difference between very “thin” temporal parts and temporal slices does not matter much in the present context. I shall talk mainly of “slices,”

but what I shall say could be applied to “thin parts” easily enough.) The second thesis is that the way in which “time-involving” definite descriptions of physical objects like ‘the book on the table at  $t$ ’ relate to their referents should be analyzed or explained in terms of slices.

One thesis about the referents of time-involving descriptions that Tooley clearly does *not* hold is this: that phrases like ‘the book on the table at time  $t$ ’ actually denote slices; that ‘the book on the table at time  $t$ ’ denotes the “ $t$ -slice” of the book. Philosophers who hold *this* view must either say that sentences like ‘The book on the table at time  $t$  is identical with the book on the chair at time  $t^*$ ’ must always express propositions that are, strictly speaking, false, or else they must say that in such sentences ‘is identical with’ does not express the idea of numerical identity—two slices being *two* slices—but rather some relation of causal or spatiotemporal continuity.<sup>3</sup>

Tooley’s view of the matter is more artful and does not confront this awkward dilemma. As Tooley sees it, ‘the book on the table at  $t$ ’ is a name for a certain four-dimensional object, one having slices “of the book variety” as parts, these parts being bound together into a whole by (again) some relation of causal or spatiotemporal continuity. As Tooley sees it, the phrase ‘the book on the table at  $t$ ’ means something like ‘the four-dimensional book the  $t$ -slice of which is on (the  $t$ -slice) of the table’ and, similarly, ‘the book on the chair at  $t^*$ ’ means ‘the four-dimensional book the  $t^*$ -slice of which is on (the  $t^*$ -slice) of the chair’. And, of course, no particular problems are raised by the assertion that two such descriptions as these might be names for a single object.

Both these theories about the way in which time-involving definite descriptions are related to the world can be represented pictorially. The first theory can be represented like this:

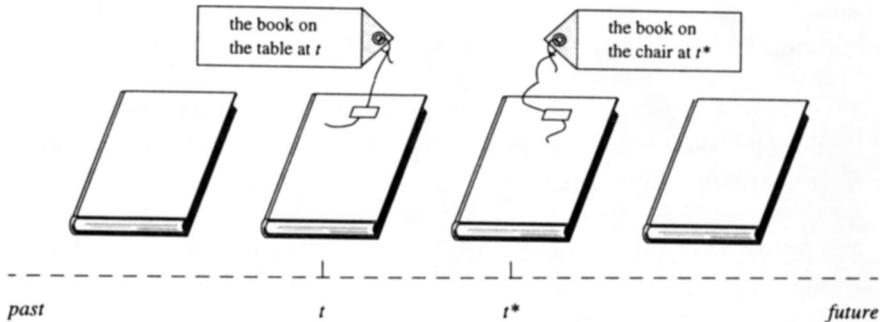


Figure 1

The line drawn beneath this figure is a “time-axis”: each point on it represents a point in time, the left-to-right arrangement of the points representing the past-to-future arrangement of points in time. The “books” drawn above the time-axis represent slices “of the book variety.” I have, of course, been able to represent only a few such slices: the viewer must somehow contrive to imagine that the sequence of book-drawings is continuous, just as the sequence of points on the line is. Each book-slice-representation is drawn directly above the point that represents the point in time it “occupies.” Finally, the description-referent relation is represented by labels bearing the description and attached to the referent. (I don’t mean this device in any sense to represent the “mechanics” of securing reference. It is meant to be neutral with respect to theories of what reference is and how it is established. It is used merely to display the fact that certain phrases denote certain objects.)

The second theory, Tooley’s theory, may be represented by this picture:

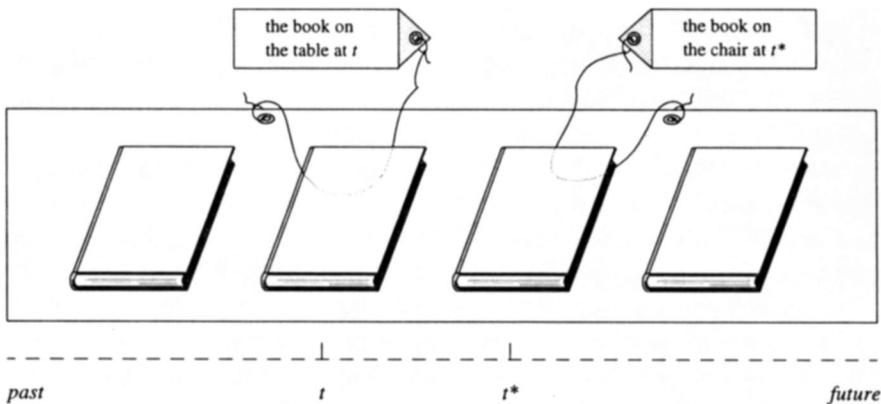


Figure 2

In this picture, the time-axis and the books mean what they meant in Figure 1. The rectangle represents the boundary of the four-dimensional object that is what the book really is. The description-referent relation is again represented by labels, but the labels are fixed to the “whole” book and not to slices of the book. Moreover, each of the cords attaching the labels to the “whole” book passes through a book-slice—the same slice it is attached to in Figure 1—on its way to its point of attachment to the book. This feature of the picture is intended to represent Tooley’s idea that

a description like ‘the book on the chair at  $t$ ’ gets “linked up with” the book *via* the  $t$ -slice of the book. (The points of attachment of the labels have no significance; I have to draw them as attached *somewhere*.)

In my view, these pictures embody grave illusions about the nature of enduring objects and about the way in which time-involving descriptions apply to their referents and about the kind of facts expressed by sentences formed by flanking the identity sign with time-involving descriptions. (Let us call such sentences ‘temporal identity-sentences’.) I believe it is a grave illusion to suppose that there are four-dimensional objects or that things are somehow composed of “temporal parts” or “slices” or that the facts represented by temporal identity-sentences even look as if they were facts about such objects. I believe that people who suppose such things as these are the victims of seductive but incoherent pictures—pictures like Figure 1 and Figure 2, in fact. In “Four-dimensional Objects,” I presented arguments for the following conclusion: the thesis that an enduring object is composed of temporal parts has unacceptable modal consequences. But these arguments were far from conclusive. For one thing—not the only thing—they presupposed that a counterpart-theoretic account of modality *de re* was unacceptable. I might in this paper try to plug some of the holes in the argument of “Four-dimensional Objects.” I might, for example, try to show why I believe a counterpart-theoretic account of modality *de re* to be unacceptable. I will not do this. I propose instead first to explain why I find temporal parts hard to understand, and, secondly, to describe how identity across time “looks” to someone who has no grasp of temporal parts—to provide a “picture” of identity across time that is a rival to the pictures presented in Figures 1 and 2. Finally, I shall show how to draw a third picture, for Figures 1 and 2 have at least one rival, a rival that is far more different from them than they are from each other.

2. What are temporal parts supposed to be?—or, if you like, What is ‘temporal part’ supposed to mean? Many philosophers find these things, and this phrase, wholly unproblematic. They construct elegant solutions to various philosophical problems by appealing to temporal parts, and they seem to assume that these objects enjoy the same methodological rights as numbers or sets: although there are philosophical problems that could be raised in connection with them (I dare say they will be willing to concede

that much), temporal parts are well enough understood that philosophers can appeal to them without incurring any obligation to interrupt their discussions of personal identity—or whatever—to explain them. (The most celebrated example of this sort of appeal to temporal parts would probably be Quine’s “Identity, Ostension, and Hypostasis.”<sup>4</sup>)

Well, isn’t it pretty clear what they are? We have, after all, perfectly intelligible *names* for them. For example: ‘St. Paul’s in 1850’ and ‘Philip drunk’. (The second of these is presumably a name for a non-connected part of Philip.) And we understand these names perfectly well, because we understand perfectly well the sentences in which they occur: ‘St. Paul’s in 1850 was dingier than St. Paul’s last year’; ‘Philip drunk is rash, but Philip sober is crafty’. And if we understand the names, we understand the things: ‘temporal part’ is merely the general term that covers objects like St. Paul’s in 1850 and Philip drunk.

I do not think this is right, for I do not think that ‘St. Paul’s in 1850’ and ‘Philip drunk’ are names at all. Let us look at some sentences in which these phrases occur. To start with, let us look at ‘St. Paul’s in 1850 was dingy’. In this sentence, ‘in 1850’ is an adverbial phrase modifying ‘was’: When was St. Paul’s dingy?; in 1850, at any rate.<sup>5</sup> It is, therefore, a mistake to think of this sentence as having a structure like this:

<u>St. Paul’s</u>	<u>in 1850</u>	<u>was</u>	<u>dingy</u>
substantive	attributive adjective	copula	predicative adjective
subject		predicate	

Its structure is rather this:

<u>St. Paul’s</u>	<u>in 1850</u>	<u>was</u>	<u>dingy</u>
substantive	adverb	copula	predicate adjective
subject		predicate	

Philosophers who do not recognize the adverbial function of phrases like ‘in 1850’, and who treat them as if they were adjectives modifying the

subjects of the verbs they in fact modify, are guilty of a fallacy I like to call adverb-pasting. If the adverb-pasters were given free rein, all manner of fascinating philosophical problems would be created. Consider, for example, the sentence

Alice, viewed full-face, is strikingly beautiful, but Alice, viewed in profile, is aesthetically unremarkable.

Here we have the germ of the problem of cross-perspectival identity: what is the relation between the strikingly beautiful Alice-viewed-full-face and the aesthetically unremarkable Alice-viewed-in-profile? And there is the problem of cross-evaluational identity: what is the relation between the brilliant Hume-according-to-Professor-A and the doltish Hume-according-to-Professor-B?

More or less the same points (to revert to the case of temporal adverbs) apply to more complicated sentences, like our 'St. Paul's in 1850 was dingier than St. Paul's last year'. The grammatical structure of this sentence may be compared with the grammatical structure of 'Condorcet as representative figure of the Enlightenment is more interesting than Condorcet as original thinker'. ("Condorcet is interesting." "How? In what respects?" "Well, as a representative figure of the Enlightenment; less so as an original thinker." "St. Paul's was dingy." "When? At what times?" "Well, in 1850; less so last year.") I trust that no one will want to say that 'Condorcet as representative figure of the Enlightenment' is a name of a certain temporal part of Condorcet, a part that comprises just those moments at which he was engaged in representing the Enlightenment, although 'Condorcet as original thinker' is a name of the part of Condorcet that comprises those moments at which he was engaged in original thought.

A similar account applies to 'Philip drunk'. As a first approximation to a correct account of the sentences in which this phrase figures, we may say that a sentence like 'Philip drunk is rash' is just a fancy way of saying 'Philip, when he is drunk, is rash', or—even less fancy—'Philip is rash when he is drunk'. (We may compare 'Philip drunk is rash, but Philip sober is crafty' to 'Philip the man is rash, but Philip the politician is crafty'. Lest someone argue that 'Philip the politician' is a name for a temporal part of Philip, the part comprising just those moments at which he was engaged in politics, we may stipulate that all Philip's actions had

both a personal and a political component, and that the utterer of our sentence means by it that Philip rarely thought about the consequences of his acts for himself and his friends and family, but always thought carefully about their political consequences.) I say ‘as a first approximation’ because the rhetoricians have been at ‘Philip drunk’. Availing themselves of the fact that ‘Philip drunk’ can look rather like a substantive, they have produced conceits like this: ‘Macedon has two kings, Philip drunk and Philip sober’. But this sort of trope (doubtless the Greeks had a word for it) is of no ontological interest. We should remind ourselves that it may have influenced our thinking and then turn our attention to more profitable matters.

We cannot, therefore, explain ‘temporal part’ by saying that it is “merely the general term that covers objects like St. Paul’s in 1850 and Philip drunk.” What other explanations are available? I know of only one. It is due to David Lewis, and, as one might expect, it repays close attention.

Some would protest that they do not know what I mean by “more or less momentary person-stages, or time-slices of continuant persons, or persons-at-times”. Others do know what I mean, but don’t believe there are any such things.

The first objection is easy to answer, especially in the case where the stages are less momentary rather than more. Let me consider the case only; though I think that instantaneous stages also are unproblematic, I do not really need them. A person-stage is a physical object, just as a person is. (If persons had a ghostly part as well, so would person-stages.) It does many of the same things that a person does: it talks and walks and thinks, it has beliefs and desires, it has a size and shape and location. It even has a temporal duration. But only a brief one, for it does not last long. (We can pass over the question how long it can last before it is a segment rather than a stage, for that question raises no objection of principle.) It begins to exist abruptly, and it abruptly ceases to exist soon after. Hence a stage cannot do everything that a person can do, for it cannot do those things that a person does over a longish interval.

That is what I mean by a person-stage. Now to argue for my claim that they exist, and that they are related to persons as part to whole. I do not suppose the doubters will accept my premises, but it will be instructive to find out which they choose to deny.

First: it is possible that a person-stage might exist. Suppose it to appear out of thin air, then vanish again. Never mind whether it is a stage of any person (though in fact I think it is). My point is that it is the right sort of thing.

Second: it is possible that two person-stages might exist in succession, one right after the other but without overlap. Further, the qualities and location of the second at its appearance might exactly match those of the first at its disappearance. Here I rely on a *patchwork principle* for possibility: if it is possible that X happen intrinsically in a spatiotemporal region, and if it is likewise possible that Y happen in a region, then also it is possible that both X and Y happen in two distinct but adjacent regions. There are no necessary incompatibilities between distinct existences. Anything can follow anything.

Third: extending the previous point; it is possible that there might be a world of stages that is exactly like our own world in its point-by-point distribution of intrinsic local qualities over space and time.

Fourth: further, such a world of stages might also be exactly like our own in its causal relations between local matters of particular fact. For nothing but the distribution of local qualities constrains the pattern of causal relations. (It would be simpler to say that the causal relations supervene on the distribution of local qualities, but I am not as confident of that as I am of the weaker premise.)

Fifth: then such a world of stages would be exactly like our own *simpliciter*. There are no features of our world except those that supervene on the distribution of local qualities and their causal relations.

Sixth: then our own world is a world of stages. In particular, person stages exist.

Seventh: but persons exist too, and persons (in most cases) are not person-stages. They last too long. Yet persons and person-stages, like tables and table-legs, do not occupy spatiotemporal regions twice over. That can only be because they are not distinct. They are part-identical; in other words, the person-stages are parts of the persons.

Let me try to forestall two misunderstandings. (1) When I say that persons are maximal aggregates of person-stages, I do *not* claim to be reducing “constructs” to “more basic entities.” (Since I do not intend a reduction to the basic, I am free to say without circularity that person-stages are aggregates of shorter person-stages.) Similarly, I think it is an informative necessary truth that trains are maximal aggregates of cars interrelated by the ancestral of the relation of being coupled together (count the locomotive as a special kind of car). But I do not think of this as a reduction to the basic. Whatever “more basic” is supposed to mean, I don’t think it means “smaller.” (2) By a part, I just mean a subdivision. I do not mean a well-demarcated subdivision that figures as a unit in causal explanation. Those who give “part” a rich meaning along these lines should take me to mean less by it than they do.<sup>6</sup>

In a way this is all very straightforward. In another way, it puzzles me deeply. Let me try to explain my puzzlement. I shall begin by restating (I hope that is what I am doing) Lewis’s explanation. I shall, as Lewis

does, speak here only of the stages or parts of *persons*, but what I shall say, like what he says, is easily generalized.

We could easily devise some sort of set-theoretic object to play the role of the “career” of a person: perhaps a function from moments of time to sets of momentary properties<sup>7</sup> could be called a *career*, and a given career could be said to be the career of a given object if its domain is just the set of moments at which the object exists and it assigns to any moment just the set of momentary properties that object has at that moment. A *part* of the career of a person or other object would then be a function whose domain is a subset of the career’s domain and which, in its domain, takes on the same values as the career. It follows from our definition of ‘career’ that a part of a career is itself a career, though not necessarily the career of anything. A *Lewis-part* of a given person is an object whose career is part of the career of that person.<sup>8</sup>

Since I understand all these words, I understand ‘Lewis-part’ and know what Lewis-parts are. In a way. In the same way as the way in which I should understand talk of “propertyless objects” if I were told that ‘propertyless object’ meant ‘object of which nothing is true’; in the same way as that in which I should understand talk of “two-dimensional cups” if I were told that ‘two-dimensional cup’ meant ‘cup that lies entirely in a plane’. These phrases would not be what one might call “semantical nonsense” for me; they would not be like ‘abra-cadabara’ or ‘machine that projects beams of porous light’ or ‘*Das Nichts nichtet*’. But I should hardly care to say that I understood what someone was talking about (even if it were he who had given me these definitions) who talked of propertyless objects or two-dimensional cups, and who, moreover, talked of them in a way that suggested that he supposed there *were* such things. For I cannot see how there could be any such things. In fact, I think I can see clearly and distinctly why there could not possibly be any propertyless objects or two-dimensional cups (so defined). And this is very nearly the position I am in with respect to Lewis-parts. I say “very nearly” because the idea of a Lewis-part is obviously not an impossible idea, not an idea that could correspond to no possible reality, for each of us obviously has at least one Lewis-part: himself. (So much is immediately evident from the definition.) But what about the “other” temporal parts of persons, their *proper* temporal parts, the objects whose careers are proper parts of the careers of persons? How can I say I can’t see how there could be any such

things in the face of Lewis's argument? I say this because I do not understand the step in his argument labeled "second." The pivotal sentence in the stop "second" is: 'It is possible that two person-stages might exist in succession, one right after the other but without overlap'. I cannot see how two person-stages could exist "in succession, one right after the other but without overlap." I will try, in Quine's words, to evoke the appropriate sense of bewilderment. God could, I suppose, create *ex nihilo*, and annihilate a year later, a human being<sup>9</sup> whose intrinsic properties at any instant during the year of its existence were identical with the intrinsic properties of, say, Descartes at the "corresponding" instant in, say, the year 1625. And if God could do that, he could certainly create and annihilate a second human being whose one-year career corresponded in the same way to the 1626-part of Descartes's career. But could God, so to speak, lay these two creations end-to-end? (I ignore nice points about open and closed intervals of time.) Well, he could create, and two years later annihilate, a human being whose two-year career corresponded to the 1625/1626-part of Descartes's career. He could do this, but I don't see what else, what more, he could do to accomplish the goal of "laying these two creations end-to-end." What I cannot see is how, if God did this, it could be that the "two-year-man" would have first and second "halves." More exactly, I don't see how it could be that the first half of the two-year-man's career could be the career of anything, and I don't see how it could be that the second half of the two-year-man's career could be the career of anything. When I examine the story of the creation and annihilation of the two-year-man, I don't find anything in it that comes to the end of its existence after one year: the only thing "there" (as I see matters), the two-year-man, will *not* come to an end after one year; he will, rather, continue to exist for another year. And, in the same way, when I examine the story, I don't find anything in it that begins to exist halfway through the story.

These remarks are not meant to be a refutation of Lewis's argument. They are meant only to identify the point in the argument at which one philosopher, myself, parts company with Lewis. In identifying this point, I am merely accepting Lewis's invitation: "I do not suppose the doubters will accept my premises, but it will be instructive to find out which they choose to deny."

To recapitulate: in virtue of Lewis's explanation of what temporal parts are, I understand the term 'temporal part', but I do not see how (in

the sense of 'temporal parts' Lewis's explanation has supplied) a thing could have temporal *proper* parts. And this is not the end of my difficulties with proper parts—my difficulties, that is, with understanding how temporal parts (understood as "Lewis parts") could have the features that those who appeal to temporal parts in their philosophical work suppose them to have. When I look at temporal parts through the lens Lewis's explanation supplies, I see things that seem to me obviously to have modal properties at variance with the modal properties that are commonly ascribed to temporal parts. It seems to me to be obvious that the one temporal part of a thing must be "modally ductile" and "modally compressible." Consider, for example, Descartes and his one temporal part, himself. Descartes's one temporal part—Descartes—existed from 1596 to 1650. The object that is called both 'Descartes' and 'Descartes's only temporal part' might have existed for twice as long as it did (it is modally ductile), and it might have existed for only half as long (it is modally compressible). It seems obvious to me, moreover, that this object might have had entirely different momentary properties at the corresponding points in its career. Suppose, for example, that Descartes had been stolen by Gypsies shortly after he was born; if that had happened, then the object that is in actuality Descartes's one temporal part would still have existed but might well never have acquired the property "is able to speak French." These modal propositions about Descartes's single temporal part seem to be inconsistent with the modal properties that are ascribed to temporal parts by those philosophers who believe that there is useful philosophical work for temporal parts to do, for these philosophers, or most of them, seem to treat temporal parts as things that have their "temporal extensions" and their careers essentially. Now I may be wrong about this. I am doing no more than recording an impression. I can't point to any passage in which a philosopher has said in so many words that temporal parts have either their temporal extensions or their careers essentially. My point is only this: if there are philosophers who think that temporal parts have their temporal extensions and their careers essentially, I can't see how what they believe could be true.

Let us now return to the topic of identity across time. If there are, as I believe, no temporal parts, or if each enduring thing has only one, where does this leave us with respect to this notion? Surely it is temporal parts (or stages, or phases, or whatever) that are the *terms* of the cross-time

identity relation? If a thing has no temporal parts, or has only one, what can be meant by the assertion that it exists at different times?

3. These questions conflate several issues.

First, whether or not there is such a thing as “identity across time,” there are certainly what I have called temporal identity-sentences; sentences that consist of ‘is identical with’ flanked by time-involving definite descriptions. Tooley’s sentence ‘The book on the table at  $t$  is identical with the book on the chair at  $t^*$ ’ is an example of a temporal identity-sentence, though, as we shall see, it is a rather special one. And, of course, what we say when we utter temporal identity-sentences is often true. Therefore, there are facts that we may call “facts of temporal identity.” Does the existence of these facts entail that there is such a relation as “identity across time”? Well, that all depends on what one means by ‘identity across time’. These words are sometimes used as a name for a relation that is not identity and which takes proper temporal parts of enduring things as its terms. This conception is illustrated in Figure 1. (But the content of Figure 1 is not exhausted by the proposition that there is such a relation. Figure 1 also illustrates a semantical thesis: that the time-involving definite descriptions that figure in temporal identity-sentences denote proper temporal parts.) The words ‘identity across time’ are sometimes used as a special name for identity, a name we call identity by when its terms are the four-dimensional wholes that some philosophers take enduring objects to be—rather as ‘equality’ is a name we call identity by when its terms are numbers. This conception is illustrated in Figure 2. (But the content of Figure 2 is not exhausted by the trivial thesis that four-dimensional objects are identical with themselves. Figure 2 also illustrates a semantical thesis: that the time-involving definite descriptions that figure in temporal identity-sentences denote four-dimensional wholes and apply to them only *via* their proper temporal parts.)

If ‘identity across time’ means, as the theory represented by Figure 1 says it does, a relation that takes proper temporal parts as its terms, then there is no such thing, for there are no proper temporal parts. But whether or not there is such a thing as “identity across time,” there are facts of temporal identity (Moreover, if there are no proper temporal parts, then

the account of facts of temporal identity represented by Figure 2 is incorrect, since that account essentially involves proper temporal parts.)

How, then, should we understand facts of temporal identity? I believe that the first step towards understanding these facts must be to dispense with pictures that depict enduring objects as being composed of parts that are distributed along a time-axis. The next step is to replace such pictures with a very simple-minded picture:

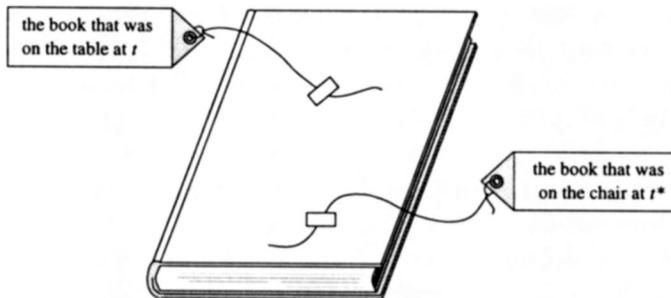


Figure 3

In this picture, as in the others, the “book-drawing” represents a three-dimensional object. (But this is dangerously close to a pun. “Slices” are three-dimensional in the sense that they have an extension of measure zero along one dimension and a non-zero extension in three others. The book-drawing in Figure 3 has a non-zero extension in three dimensions *tout court*. “Slices” do not *endure* through time—this is what Wittgenstein would call a grammatical proposition—but are located at a time; books endure.) As in Figure 1, each label is attached to a three-dimensional object. As in Figure 2, each label is attached to the *same* object. (Thus temporal identity sentences, according to the theory represented in Figure 3, are straightforward expressions of numerical identity.) Figure 3, unlike its two rivals, assimilates temporal identity-sentences to other identity-sentences. ‘The book that was on the table at  $t$  is identical with the book that was on the chair at  $t^*$ ’ differs from ‘The book that Bill is reading is identical with the book that Tom is looking for’ in only one interesting respect: in the former sentence, ‘is identical with’ is flanked by descrip-

tions whose verbs are in the past tense, and in the latter sentence it is flanked by descriptions whose verbs are in the present tense. (Both sentences, of course, are equally well represented by pictures showing one book twice labeled, which is what would intuitively seem right for a sentence that pivots about 'is identical with'.)

The acute reader will have noticed the transition in the preceding paragraph (and in Figure 3) from Tooley-style time-involving descriptions like 'the book on the chair at  $t$ '—verbless ones, that is—to the time-involving descriptions containing tensed verbs that are the normal time-involving descriptions of everyday discourse. In some simple cases, the verb in such descriptions can be dropped: 'The book on the table at noon was red', is good English, though, I would point out, a 'that was' is present "in spirit" in this sentence, even if it is unpronounced, for the adverbial phrase 'at noon' modifies an understood 'was'. (Philosophers who suppose that such phrases as 'at noon' and 'in 1850' are adjectives describing the location of temporal slices or whatnot are, as we have seen, mistaken.) In more complicated cases, there is no possibility of wholly eliminating tensed verbs from time-involving descriptions, as is shown by 'the car that used to be owned by the man who will marry the woman who had been the first woman President'.

There is one sort of temporal identity sentence that cannot be represented in any very straightforward way by a picture in the style of Figure 3. I have in mind temporal-identity sentences containing so-called "phase-sortals." (A phase-sortal is a count-noun such that a given object may fall within its extension at one time but not at another.) Consider, for example

The surgeon who removed the tumor from my brain is the boy who once shined my shoes.

Obviously (one might argue) we cannot represent a fact of the sort this sentence purports to express by a picture of someone twice labeled, for no one is simultaneously a boy and a surgeon. And it will do the friends of Figure 3 no good to protest that the 'is' in this sentence is a rhetorical conceit, the strictly correct copula being 'was', since pictures in the style of Figure 3 are unable to represent the use of a tensed identity-sign.

There are various ways to deal with this problem. One way would be to say that this sentence is not really an identity-sentence at all, but a pred-

ication. That is, to say that what the speaker of this sentence is doing is saying of a certain surgeon that he (the surgeon) is now such that as a boy he shined his (the speaker's) shoes and was, moreover, the only boy to do so. I shall not explore this avenue. I shall instead investigate a way of treating this sentence as a real identity-sentence. But what I am going to say is no more than a proposal for dealing with phase-sortal identity-sentences. The "predication" analysis, or some other analysis entirely, may turn out to be more fruitful.

A completely general treatment of phase-sortal identity-sentences as real identities would involve a lot of detail. I will show how to treat a special class of phase-sortal identity-sentences, those in which phase-sortals occur only in descriptions of the form

‘the’ + PHASE-SORTAL + RELATIVE PRONOUN +  
PREDICATE.

(Our "surgeon" sentence is of this kind.) I do not think that a correct treatment of any phase-sortal identity-sentence will differ in any interesting way from the treatment I shall propose for sentences of this special kind. I propose that phrases of the form displayed above should be regarded as abbreviating phrases of the form

‘the’ + NON-PHASE-SORTAL + RELATIVE PRONOUN +  
‘when a(n)’ + PHASE-SORTAL + PREDICATE.

For example—assuming that ‘human being’ is not a phase-sortal—our "surgeon" sentence can be regarded as an abbreviated version of

The human being who, when a surgeon, removed a tumor from my brain is  
the human being who, when a boy, once shined my shoes.

If it is correct to regard our "surgeon" sentence as an abbreviation for this sentence, then the former sentence presents no difficulties for the "tag" model for understanding temporal identity-sentences, since there is no difficulty in picturing a man bearing two labels, each of them bearing one of the descriptions flanking the copula in this sentence; and there is no difficulty in supposing that the man so pictured is correctly labeled.

4. I turn finally to a nest of interrelated problems about pictorial representation that are faced by anyone who holds that facts of temporal identity are best represented by pictures like Figure 3.

Let us begin with some problems about temporal identity-sentences whose subject no longer exists. For example:

The dog I owned in 1957 was the dog I owned in 1955.

(A moment ago, I made an imaginary critic say, “. . . pictures in the style of Figure 3 are unable to represent the use of a tensed identity sign.” In the context in which I made him speak, he had a good point. But ‘was’ in *this* sentence is not a tensed identity-sign in the sense that was there at issue. Its tense is not determined by the fact that 1955 was earlier than 1957. It merely reflects the fact that the dog I owned in 1955 and 1957 is now dead. If I had wished to state the same fact of temporal identity in 1958—when the dog was still alive—I should have used the sentence ‘The dog I owned in 1957 is the dog I owned in 1955’.) One question we might ask is this. What are the tags to be attached to, given that the thing they are supposed to be attached to no longer exists? But this question confuses the represented object with the representation. I am not saying that facts of temporal identity are facts of this form: there are currently existing objects that could be twice labeled with tags on which time-involving descriptions are inscribed. We are not talking about a possible practice of actually tagging objects we could put our hands on; we are talking about drawing pictures of tagged objects, the purpose of these pictures being to serve as graphic, intuitive representations of a certain sort of fact. The tags and the cords are merely diagrammatic representations of semantical reference. And it just is a fact that we can refer to objects that no longer exist: the fact that we can refer to Socrates is not a proof of the immortality of the soul. There may or may not be a philosophical problem about how it is that we can refer to objects that no longer exist, but it does not seem to have much to do with the problem of analyzing temporal-identity sentences. That is, this problem, if it exists, is equally a problem for the proponents of any theory of “identity across time.” Therefore, the correct pictorial representation of the fact expressed by the sentence displayed above is simply a picture of a dog (a dog that no longer exists; but there can be pictures of dogs that no longer exist) labeled both ‘the dog I owned in 1957’ and ‘the dog I owned in 1955’.

But this answer suggests a second and much more interesting question. What exactly is the picture to show? Suppose my dog lost her tail in 1956. Will the picture show a tailed or a tailless dog? 'Dog' is probably not a phase-sortal, but dogs, like most things, can fall under various phase-sortals (like 'tailless dog') and a picture can avoid representing a dog as falling under a given phase-sortal only by eschewing detail; and a picture that eschews *all* detail is not a picture at all, but, like the Bellman's map, a perfect and absolute blank.

This problem, the problem of what exactly the picture is to show, is not a problem that the friends of Figure 3 face only when they are attempting to generalize the device exemplified by Figure 3 to enable it to depict those facts of temporal identity that involve objects that no longer exist. Figure 3 itself presents them with this problem. Suppose that Tooley's book had got a stain on its cover between  $t$  and  $t^*$ . Shall our diagrammatic representation of a book include a stain or not? We can, of course, depict the book so sketchily that we do not have to decide about that. But this tactic will not work in all cases: suppose we are concerned with a temporal identity sentence about a human being who is at one time a frail four-year-old girl and at another time a grossly obese, bearded, six-foot-tall (surgical) male who has lost a leg? Even a stick-figure has to have a definite number of legs. (And, of course, someone who, like me, thinks that Danton was at one time a fetus and at another time a severed head will sometimes find it even more difficult to draw sufficiently sketchy pictures.) If we considered only cases like that of the stained book and the girl-man, we should probably be tempted to say that, obviously, the picture should represent the book (or whatever) as it is at the time the picture is scheduled to be displayed. Thus, if the book was unstained at  $t$ , stained at  $t^*$ , and now once gain unstained, the picture, if it is to be shown now, should represent the book as unstained. But we have already seen why this will not work: there are temporal identity sentences whose terms denote objects that no longer exist; and, of course, an object that does not now exist cannot be depicted as it is now. (For that matter, there are identity-sentences that are not *temporal* identity-sentences and whose terms no longer exist. 'The horse Caligula made a consul was the only horse to hold political office', for example.)

The solution to this problem is a simple one: it doesn't make any difference what the picture shows. Remember, the picture is only a picture.

Showing one thing twice-tagged is simply a device for graphically representing the fact that the descriptions inscribed on the tags have the same referent. If we want to represent graphically the fact that ‘the most famous teacher of Aristotle’ and ‘the most famous pupil of Socrates’ denote the same man, we have only to draw a man labeled with tags bearing these phrases. We are no more constrained to draw him at some particular age or in some particular condition or circumstances, than the author of an illustrated history of philosophy is constrained to choose a picture of Plato that shows Plato as being of some particular age or as being in some particular circumstances. The author of the illustrated history of philosophy knows that he may print a picture (a detail from the *School of Athens*, say), that represents Plato as being—how else?—of a certain determinate age and in certain particular surroundings, and so on, and that it will be perfectly correct to label it simply ‘Plato’. (This label, by the way, will not be a description of the picture; or not in the way ‘Raphael, 1509–12, *The Vatican*’ is. It will be a description of the intentional content of the picture, like ‘the mechanism of a watch’ or ‘the structure of RNA’. We should think of the word ‘Plato’ printed under a picture as applying to the figure in the picture and not to the picture.) That is, the label ‘Plato’ is correct *tout court* and is not an abbreviation for ‘Plato in old age’ or anything else. But if a detail from a picture showing a young man conversing with Socrates and a detail from a picture showing an old man conversing with Aristotle can both be correctly labeled ‘Plato’, then they can both be correctly labeled ‘the philosopher who, in middle age, founded the Academy’, because these two phrases denote the same object.

One minor point about the labeling of pictures. Suppose the author of an encyclopedia article on General MacArthur accompanied his article with a single photograph of MacArthur, one taken when its subject was an infant, and labeled ‘Douglas MacArthur’; suppose the article contained no word of explanation of the fact that it was accompanied by a picture of an infant. There would be a lot wrong with that, but the picture would not be mislabeled. David Lewis has reminded us that someone’s use of a sentence can be faulted on lots of grounds other than falsity; similarly, someone’s use of a captioned picture can be faulted on lots of grounds other than the incorrectness of the caption. When I say that it “makes no difference what the picture shows,” I do not mean to deny the obvious truth that it would be a *queer* thing to do to represent the fact expressed

by 'The father of Charles II was the father of James II' by a picture of the infant Charles I twice-tagged. This would be queer (because it would be wholly unmotivated) even if both tags were inscribed in this style: 'the human being who, as an adult, fathered the human being who, as an adult, became the second king of England to be named Charles'. It would be a queer and unmotivated way to represent that fact, but it would be a perfectly *correct* way to represent that fact.

Figure 3, then, is the sort of picture I recommend that you use when you think about facts of temporal identity. If you use any picture at all, that is. I don't *like* pictures in philosophy, despite the fact that I constantly use them in my own thinking. Even the best attempts to picture essentially unpicturable things and states of affairs are bound to be misleading. Even so simple a fact as the fact that 'the most famous pupil of Socrates' denotes Plato can be represented only very imperfectly in a picture. For example, as we have seen, if we represent this fact by a picture of an appropriately labeled man, our picture will show far too little (nothing about the mechanics of securing reference, for example) and far too much (the picture must represent Plato as having properties that do not figure in the fact that he is denoted by the phrase inscribed on the label). The mind is curiously unable to let the extraneous features of the picture alone. My mind is, at least. It is only with a real effort of will that I am able to keep myself from thinking that no picture can really *just* be a picture of Plato, that every picture must, at best, be a picture of Plato-at-some-particular-time. (To think this is to make the mistake made by those philosophers who held that a geometrical diagram can't *just* represent a triangle.) Most of our discussion of pictures in the style of Figure 3 has had only one object: to help us to see that such pictures have, of necessity, extraneous features, and to convince us not to attribute any significance to them.

There is another lesson that must be learned about these pictures. They do not, by themselves, teach us anything about facts of temporal identity. Their whole point is supplied by their rivals. If pictures in the style of Figure 3 are misleading, their rivals are just ruinously wrong. And these ruinous pictures underlie a lot of our thinking about time and identity. They do not contribute to our *arguments* for or against philosophical theories; they condition what premises we shall find plausible. Pictures come before argument, and, therefore, pictures cannot easily be dislodged from our minds by argument. I don't say this is *impossible*. After all, I

have tried to dislodge Figures 1 and 2 from your minds by arguing that the temporal parts that figure essentially in these pictures do not exist. But if your view of “identity across time” is supplied by one or the other of these pictures, you will set out to find some premise or inference in my arguments that you do not accept (if you attend to these arguments at all). And, of course, you will succeed. No attempt to refute a view that rests on powerful and appealing pictures can hope to succeed unless it supplies a rival picture of its own. And that is my only reason for asking you to consider Figure 3.

5. I have called Figure 3 simple-minded, and I have said that it teaches us nothing about facts of temporal identity. I have said these things because, in my view, facts of temporal identity are (*per se*) rather simple-minded facts, and there is nothing to learn about them. There *are* facts of temporal identity that present us with grave metaphysical problems. There are, for example, facts about the persistence of objects through a complete change of parts. But such problems are not problems about facts of temporal identity, any more than problems about causal relations are problems about relations, or problems about mental predicates are problems about predication. For all I have said, there may be metaphysical difficulties that infect every (alleged) fact of temporal identity; if so, these are metaphysical difficulties that are inherent in the very notion of time and which infect every (alleged) fact that involves the passage of time. In short, every one of the real problems about time and identity is either too special or too general to be correctly describable as “the problem of identity through time.”

If this is so, why is there so very persistent a conviction among philosophers that there is such a problem? I am not enough of an historian of philosophy to answer this question. And I think that one would have to be an historian to answer it. One would have to find the most primitive, fumbling cases of wonder about the nature of “identity through time,” cases that were clearly differentiated both from wonder about time itself and from wonder about special problems of identity like those presented by the Resurrection of the Dead or the Ship of Theseus. I would hazard a guess, however, that the root of the so-called problem of identity through time has something to do with what I have called “adverb pasting.”

Here is a famous passage from Locke.

*Wherein identity consists.*—Another occasion the mind often takes of comparing, is the very being of things, when, considering anything as existing at any determined time and place, we compare it with itself existing at another time, and thereon form the ideas of *identity* and *diversity*. (*Essay*, Book I, Ch. 27.)

I have a hard time resisting the impression that Locke thought that ‘itself existing at another time’ was a name. Or perhaps, since the point I want to make has nothing to do with pronouns, I should say that I have a hard time resisting the impression that Locke thought that phrases like ‘Mary existing in 1689’ and ‘Mary existing in 1690’ are names, and, moreover, names for things that are in some sense two, even if they are also in some sense one. (If Locke did think this, however, it doesn’t seem to have done his investigations of substantive problems about vegetable, animal, and personal identity any harm. My purpose is not to criticize Locke’s whole treatment of his subject.) And it seems even clearer to me that, if Locke did not accept this thesis, neither did he reject it. Perhaps the most accurate thing to say is that the idea of “the two Marys” touched the fringes of his thought so delicately as to give him no occasion to ask himself what he thought about it. This judgment of mine is a matter of “feel” and is probably one I, who am no very experienced reader of seventeenth-century English prose, have no business making. But I am made uneasy by ‘itself existing at another time’; why not ‘itself as it had been at another time’? If someone repeatedly makes judgments like ‘Mary was sadder in 1690 than she was in 1689’ and ‘Mary was wiser in 1685 than she was in 1680’, there is nothing really wrong with saying of him, “He’s always comparing Mary as she was at one time with Mary as she was at another.” (But it would be better to say, “. . . comparing the way Mary was at one time with the way she was at another.”) If, however, someone says, “. . . comparing Mary existing at one time with Mary existing at another,” one begins to wonder if he isn’t exhibiting at least some tendency to think of phrases like ‘Mary existing in 1690’ as names. It is in this tendency, I believe, that the problem of identity through time is rooted. What was once only a faint tendency in the minds of a few people is now an established habit of thought, one that is very hard to break, and, indeed, very hard even to recognize as a mere habit. To the degree that this habit is persistent, the tendency to think that there is a problem of identity through time will be persistent, since a philosopher who thinks that ‘Mary

existing in 1690' and 'Mary existing in 1689' are names for objects that are in some sense one and in some sense two, will very likely want to spell out the relevant senses of 'one' and 'two'.

But this answer to the question 'Why do philosophers persist in thinking that there is a problem of identity through time?', even if it is correct, leaves a much more interesting question unanswered. What is so special about time that philosophers should have a tendency toward temporal adverb-pasting and no tendency to paste other sorts of adverbs? Why is there no problem of cross-perspectival identity or cross-evaluational identity? Why is there no tendency to think that 'Alice viewed full-face' and 'Alice viewed in profile' (or 'Hume according to A' and 'Hume according to B') are names for objects that are in some sense one and in some sense two? To this more interesting question I have no answer.<sup>10</sup>

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#### NOTES

1. Michael Tooley, Critical Notice of Alvin Plantinga's *The Nature of Necessity*, in the *Australasian Journal of Philosophy* 55 (1977), pp. 91–102. The quoted passage occurs on pp. 97–98.

2. The theory I am ascribing to Tooley is very like the theory I called "Theory 2" in "Four-dimensional Objects," *Noûs* XXIV (1990), pp. 245–55.

3. This is the theory I called "Theory 1" in "Four-dimensional Objects."

4. *From a Logical Point of View* (Cambridge, MA: Harvard University Press, 1953), pp. 65–79.

5. Achille Varzi has asked me several questions about my analysis of the role of 'in 1850' in the sentence 'St. Paul's in 1850 was dingy'. They could be summed up in this question: "Granted, 'in 1850' is not an adjective modifying 'St. Paul's'; but is the only alternative that it is an adverb modifying 'was'?—are there not other possibilities?" According to the traditional grammar I was taught in school, the copula 'was' is "the verb of" the sentence, 'St. Paul's in 1850 was dingy' and 'in 1850' modifies it. But a more up-to-date grammar might tell us that when 'to be' functions as a copula, it does not belong to the grammatical category "verb" (despite the fact that 'to be', whatever its function, displays the grammatical accident traditionally definitive of the category "verb": tense, voice, mood, aspect), but rather to the category "takes an adjective and makes a verb." According to this view of the matter, the simplest verb in 'St. Paul's in 1850 was dingy' is 'was dingy'—the past tense of the verb 'to be dingy'—and 'in 1850' modifies 'was dingy'

(applies to it to produce the complex verb 'was dingy in 1850'). Another up-to-date view of the function of 'in 1850' in this sentence is this: 'in 1850' is not an adverb (a "takes a verb and makes a verb") at all, but a sentence-modifier, a representative of the grammatical category "takes a sentence and makes a sentence"; in the present case, it modifies 'St. Paul's was dingy'. Which of these three accounts of the function of 'in 1850' is correct—if there is indeed a fact of the grammatical matter—makes no difference for our purposes, for each account has the consequence that 'St. Paul's in 1850' is not a noun-phrase and hence does not represent itself as denoting an object. In the text, I presuppose the traditional view, but the correctness of the traditional view is in no way essential to my arguments. My arguments could easily be expressed in the terms provided by either of the "up-to-date" accounts of the function of 'in 1850'.

6. "In Defense of Stages," Appendix B to "Survival and identity," in *Philosophical Papers I* (New York: Oxford University Press, 1983), pp. 76–77.

7. A momentary property is a property an object could have at one time and lack at another—like *being seated* and *being Socrates' widow*, and unlike *being descended from King David*.

8. This definition leaves open the question whether there may be parts of a person's career that are "topologically unsuited" to begin the careers of objects. Suppose, by suitable correlation of numbers with moments of time, we associate the domain of Descartes's career with the real numbers 0 through 1, inclusive (we should be able to do this if there were both a first and a last moment of Descartes's existence). Could the part of Descartes's career whose domain is the rational numbers between 0 and 1 be the career of an object? A part whose domain is a set that has no Lebesgue measure? How about some relatively well-behaved (topologically speaking) but non-connected set?—say, one corresponding to March 1610 and Good Friday, 1633? These are questions that we can leave to the friends of temporal parts. How they are answered is irrelevant to our argument.

9. I ignore Kripkean scruples about whether what was apparently a human being that was created *ex nihilo* would really be a human being.

10. Some of the early parts of this essay (and a bit toward the end) are taken from my essay "Plantinga on Trans-World Identity," in *Alvin Plantinga*, J. E. Tomberlin and P. van Inwagen (eds.), (Dordrecht: D. Reidel, 1985).