

Personal Identity and Subjective Time:

Readings in *From Brain to Cosmos*

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Abstract

This document consists primarily of an excerpt (chapter 5) from the author's book *From Brain to Cosmos*. That excerpt presents an analysis of personal identity through time, using the concept of subjective fact that the author developed earlier in the book. (Readers unfamiliar with that concept are strongly advised to read chapters 2 and 3 of *From Brain to Cosmos* first. See the last page of this document for details on how to obtain those chapters.)

For more information about the author's book *From Brain to Cosmos*, or to learn where to find other chapters of the book, please consult the last page of this document.

Chapter 5

Conscious Beings and Their Histories

In Chapter 4 I showed how to take a preliminary step toward the first goal set forth in Chapter 1. To do that, I pointed out a logical fact about consciousness events: that one consciousness event can exist for another. This fact is interesting, not only because of its consequences for knowledge, but because of its bearing on another major philosophical problem: that of *personal identity*. In this chapter I will show how the ideas of subjective fact and of consciousness events can lead us toward a solution to this problem.

Personal Identity: An Introduction

The problem of personal identity¹ is one of the most important philosophical problems from a practical point of view. It amounts to the following question: How do all the different stages and events in a person's life form the life of a single, undivided individual? It is not obvious why these

events and stages don't just exist as separate phases, instead of amounting to the career of one person. If we look at a single snapshot from a person's life — a single moment or brief stage — it may be clear that there is one person there. But if we consider two such stages, perhaps many years apart, what are the grounds for claiming that they really are phases in the career of the same person?

The problem of personal identity becomes acute when we consider that some people change a lot over time, and that all of us change at least a little from moment to moment. The problem asks us to consider what, if anything, remains the same through all these changes.

The philosophical literature contains several different accounts of personal identity. Such accounts examine the conditions under which two given states or stages of personal existence are parts of the career of the same person. I will not attempt here to summarize all of these theories or to criticize them individually. Instead I will refer the reader to the literature on this topic for further information.

Different people have different intuitive views about what must happen if they are to continue existing through time. For example, many people feel that the persistence of memory is necessary for personal survival. On this view, a case of total, irreversible amnesia, followed by relearning of all the facts and skills that one person might know, would lead to the creation of a new person.²

Many philosophers have argued that the continuity of memory, or at least of memory-like mental traces ("quasi-memory"), is necessary for personal identity through time.³

But some people feel that even if they suddenly lost their memories and had to put everything back together from scratch, they still would survive in some form, provided that the "stream of consciousness" (William James' phrase)⁴ containing their experiences is not irreversibly interrupted.⁵ Some philosophers, notably James⁶ and more recently John Foster⁷, have supported views of personal identity in which the continuity of a stream of consciousness plays a central role. Such views differ substantially from those which require continuity of memory. One can think of puzzle cases (usually involving complete forgetting of everything, what Sydney Shoemaker has termed "philosophical amnesia"⁸) in which continuity of consciousness is preserved although continuity of memory is lost. Theories of personal identity also differ from one another in other ways far subtler than the ones I have described here.

Differences among views of personal identity have practical implications, some of them deadly serious. The most dramatic examples of these implications arise in medical ethics. Here I will mention only one such example, based on ones in the literature.⁹ Imagine that a patient has contracted a brain disorder which leads to complete amnesia but not to coma, and which leaves no permanent physiological impairment so that the patient can relearn everything from scratch and thereafter live a nearly normal life. If personal identity depends upon continuity of memory, then the original patient has ceased to exist. Thus, killing the patient immediately after the onset of total

amnesia merely prevents the formation of a new person. Such an act seems at first glance to have roughly the same moral import as contraception; it prevents the creation of an as-yet-nonexistent person. But if personal identity depends upon some version of continuity of consciousness, then the same person likely still exists after amnesia sets in. In that case the killing is a much more serious matter; it is euthanasia at best, murder at worst.

The differences between theories of personal identity sometimes are thought to have important consequences for beliefs about immortality.¹⁰ Suppose that you somehow got the straight information on what will happen to you after your death. Suppose that what you learned was that the perceptual processes now occurring with the help of your brain will either continue somehow in an immaterial soul or be transferred by scientists to the brain of a new body. However, all of your memories (along with "quasi-memories" and the like) of life on Earth will perish with your cortex. Would this form of "immortality" constitute your survival?¹¹ On the continuity-of-consciousness view of personal identity, this scenario may yield real survival — a continuation of your existence, albeit one in which you start all over again as what psychologists call a "blank tablet." On memory-based views of identity, this scenario leaves no hope of survival.

An Agenda

In this chapter I will develop a partial theory of the histories of conscious beings. I will not yet try to pass from facts about how things seem to the conclusion that there are conscious beings which persist through time. (I will address that task in Chapter 10.) But one does not need to assume that there are persisting conscious beings to study those interesting trains of events which we call "histories of conscious beings." For now, one can think of these trains simply as histories of *changing points of view*. Alternatively, one can think of them as *conscious lives* — temporally extended processes involving awareness.

The theory developed here will make use of the apparatus of consciousness events and subjective fact developed in previous chapters. My aim in developing this theory is twofold. First, I want to pave a little more of the road from experience to cosmos by showing that one can infer the existence of a conscious-subject history from facts about how things seem now. Second, I wish to clarify and rigorize some concepts which we often use informally and which will be used more carefully in later chapters of the book. The most important of these concepts is that of *subjective time* — time as experienced by a conscious subject.¹²

Before beginning, I want to examine a more general problem about the notion of personal identity.

The Vagueness of Personal Identity

Philosophers have noticed that the notion of personal identity may be vague in a significant way. Shoemaker has pointed this out explicitly¹³, and also has referred to "a parochial element"¹⁴ present in our usual thinking about that identity. Eli Hirsch has discussed the possibility of alternative notions of personal identity which might appear as normal to some (possible) beings as our notion does to us.¹⁵ The arguments with which these various philosophers support their various conclusions suggest that there is no unique, logically rigorous notion of personal identity, and that our ordinary criteria of personal identity may well contain a conventional (or at least a contingent) element. The differences among different notions of personal identity do make a difference; they can lead to distinct moral and religious conclusions. Hence we must *explicate*, or find a more precise version of, the notion of personal identity before we can hope to compare these alternative conclusions.

My objective here is to define and study one precisification of the notion of personal identity. I will provide a definition of a rigorous notion — that of the identity of a *conscious subject* through time — which corresponds roughly to the notion of the identity of a person. Foster already has proposed an interesting account of the identity of the conscious subject — what he has called "subject identity."¹⁶ My account will be similar to Foster's

in certain respects, though the two accounts differ in important ways.¹⁷ My account of conscious-subject identity is not supposed to capture the entire intuitive notion of personal identity, nor will it agree perfectly with everyone's feelings about personal continuity. (For example, I doubt that every person would feel comforted if it turned out that something identical to him/her in the suggested sense will continue to exist after his/her death — although I think that he/she should feel somewhat relieved.) The notion of the identity of the conscious subject does come close enough to the idea of personal identity to count as one plausible way of making the latter notion precise.

Continuance and Subjective Duration

In what follows I will use the term *conscious subject*, or just *subject*, informally to mean "conscious being." At this stage, I am not yet using the existence of conscious beings as a premise. However, it will be convenient to talk about subjects to motivate certain arguments. Without defining "subject" at this stage, I will take it for granted that a subject is an entity whose history includes consciousness events. This, I believe, would follow if one defined a conscious subject as an entity which is conscious. The most familiar conscious subjects are conscious humans — or, if one prefers, their conscious minds or selves. In Chapter 10 I will take up the topic of conscious subjects again, and will provide a more rigorous characterization of conscious

subjects.

Our immediate aim here is to find out in what the identity through time of a subject's consciousness consists. First we need to find an answer to the following question: Under what conditions do two consciousness events form parts of the same conscious-subject history? This is the analogue, for conscious subjects, of the question of the nature of personal identity.

We can restate the question of conscious subject identity as follows. Consider two consciousness events; call them *x* and *y*. What determines whether *x* and *y* are consciousness events in the same conscious life, or subject history? In other words, how are the consciousness events in the life of a conscious being strung together to form the conscious life of a single being?

In Chapter 4 I discussed the fact that one consciousness event can exist for another. If a consciousness event *y* exists for another consciousness event *x*, then in *x* it seems as if *y* exists. However, in *x*, it may be that *y* does not seem *present*, but seems just past; it may be the case (and normally always is the case) that *y* is not the same consciousness event as *x*. In *x*, it may seem as though *y* just occurred; although *y* seems to be past, some of the subjective content of *y* "carries over" into *x* as part of the realm of subjective fact associated with *x*. From now on I will use the word *continuance* to describe this relationship between two consciousness events. That is, if *x* and *y* are consciousness events and *y* exists for *x*, I will say that *y* undergoes *continuance* in *x*, or simply that *y* is *continued*

during, or in, x.

The next few paragraphs are intended to point out and emphasize some psychological features of continuance. In this paragraph I will speak freely of subjects, experiences, and the like. By doing this, I am not introducing the existence of such entities as a premise. Rather, I am using discourse about such entities to point out certain facts about the way things seem.

Continuance does not occur only during episodes of deliberately focused attention, like those which arise when one works through the examples (1)-(4) in Chapter 4. Continuance occurs all the time during ordinary experience. Normally you do not think about this phenomenon. Yet every moment that you are having experiences, you also experience the fading away of immediately past experiences. For example, continuance occurs when I turn my eyes in the customary way and look at different things. As each new view begins, I "feel," without thinking about it, that what I am looking at has changed. The previous view is no longer seen, but the fact that there was such a view is evident a very brief time after that view ends. A short while later, the previous view fades into memory, or (more often) simply is forgotten.

Immediately after hearing a sudden loud noise, you are aware that something has taken place. The noise still is a matter of "immediate" experience; it has not yet become a mere memory. During the moment immediately after you hear the noise, you are no longer hearing the noise. Nevertheless, you are *immediately, directly* aware that it

happened; the event of its happening still exists for you. At that moment, continuance is occurring. The instance of seeming in which you heard the noise exists for your consciousness, but the noise no longer is heard.

Continuance allows one to be aware that one has just had an experience. Also, it allows one to know this with certainty. These points were made in Chapter 4, where I argued, in effect, that a certain kind of knowledge about consciousness events in continuance is infallible in a limited way. Memory does not share this virtue with continuance. If continuance of a remembered experience is absent, one cannot be absolutely certain, on the grounds of present experience alone, that one has had that remembered experience. There always is the threat of a false memory. But with continuance, such a threat is not an issue. When a consciousness event of yours undergoes continuance, the consciousness event itself exists for you after it ceases to belong to your present experience. The continued experience could not have been pure fantasy, or something implanted in your mind through neurostimulation, as a remembered experience might have been. (If the experience of a continued consciousness event were somehow implanted, then that consciousness event would have to have been implanted also!)

The above remarks reveal a logical connection between continuance and our *awareness of time*. In ordinary human experience, the continuance of a consciousness event makes that event seem to be immediately past, or at least passing. If a consciousness event besides a present one is not being

continued now, then that consciousness event does not appear to be in the immediate past; it may seem to be remembered from the more distant past, or perhaps it does not seem to have happened at all. Hence what is immediately past *for me* — that is, in the time ordering of my experiences as they happen to me — is simply what I am experiencing in continuance.

It is important to recognize that this kind of *psychological* immediate pastness is not the same as immediate pastness in *physical* (clock) time. The difference between these two relations becomes more obvious in cases of anesthesia or very deep sleep. It is my understanding that persons undergoing surgery under general anesthesia sometimes wake up with the feeling that no time has passed since they became unconscious, and that the happenings immediately preceding unconsciousness have "just happened." A similar experience occasionally happens in connection with normal sleep. If an experience of this sort happens, then some final moment of experience, which occurs just before the onset of unconsciousness, must lie in the immediate subjective past of the first consciousness event after awakening. For the subject, nothing has happened in between, although for outside observers time has passed. (Often the subject does not remember the last moments before unconsciousness, but this possibility need not affect the validity of this argument.)

Another example of the difference between subjective and physical pastness comes from certain psychological experiments in which events are perceived to be in the wrong temporal order. Under certain conditions, stimuli

may seem to be in an order different from the order in which the stimuli actually occurred, or it may appear as though later sensations somehow influenced the perception of earlier ones.¹⁸ This suggests that stimuli occurring in a certain order in time may give rise to experiences which occur in the opposite order in the ordering of subjective time provided by continuance. (Of course, there are other possible interpretations of these experiments. Perhaps the experiences occur in the same order as the stimuli, but afterwards *seem* to have occurred in reverse order. This interpretation actually may agree with our first interpretation, especially if Dennett's conception of what happens in these experiments is at least partially correct. On his view, it normally is impossible to say whether the experiences only are recalled as if they occurred initially in the wrong order, or whether they really occurred in that order.¹⁹)

The Stream of Consciousness

A history of a conscious subject can be thought of as the history of a single consciousness as it persists through time. This way of thinking about subject histories is not new; it can be found in Locke's theory of personal identity²⁰ and more recently in Foster's theory.²¹ Using the language of Chapters 2 and 3, we can say that such a history is some sort of series of successive consciousness events, with one event giving way to another. A string of consciousness events of

this sort, with each event giving way to the next, is the only item which can be said to be a process of being conscious — that is, to be the history of an ongoing consciousness.

This view of the history of a conscious subject allows us to form a clearer picture of what holds such histories together. If one consciousness event comes just before another, then the two events form parts of the same subject history. However, it is not important that the second event comes after the first one in "real," physical clock time. It is enough that it seems, during the second event, that the first event just happened. As we have seen, if one consciousness event is continued during a second one, then the first event is in the immediate past, or is entering the immediate past, from the subjective point of view of the second one. This continuance of one consciousness event in the next is what makes one momentary viewpoint "flow into" another to make up the successiveness of our ordinary experience. Hence if one consciousness event is in continuance during another, both events belong to the history of the same conscious subject.

Two consciousness events belong to the same subject history if they are connected by continuance in this way. We can extend this to more than two consciousness events. Suppose that there are three consciousness events a, b, and c, and that a is continued in b and b is continued in c. Since a is continued in b, a and b belong to the same subject history. Similarly, b and c belong to the same subject history. Hence all three consciousness events can be thought of as belonging to the same subject history. In general, two

consciousness events are parts of the same subject history if one can get from one event to the other by tracing a chain of consciousness events, each of which has the previous one in continuance. In such a chain, each consciousness event dies away in subjective time as the next one begins; the new event involves an immediate awareness of the previous event and of some of the content of the previous event. This intimate mingling of consciousness events constitutes the continuity of a *single consciousness* through time. Each event is a moment of experience in the life of that consciousness.

The kind of identity described in the last two paragraphs can be thought of as the identity of a *naked consciousness* through time. (One should remember that it is no more than this. I do not pretend to know whether this kind of identity is the same as personal identity for any sense of "person" richer than "conscious subject" — for example, the moral or legal understandings of a person.)

If one consciousness event "gives way" to another in the manner which I have just described, then the second event can be thought of as a continuation of the same process or "act" of being aware which began with the first event. One can find convenient examples of such continuing "acts" of awareness in one's own life. If you look at something, and then continue to look at the same thing, then the resulting prolonged experience of yours will span many new consciousness events which are connected to the first event in the way I described above. Each consciousness event within this experience (except for the last) is in the

immediate subjective past of another consciousness event within that experience. For all practical purposes, each consciousness event in such a chain embodies the same consciousness as does the previous event. A new consciousness event can comprise a different stage of each of the processes of sensing, thinking, and so forth which began during preceding events.

At each consciousness event in this chain, the relationship between that event and the one before it *seems like a change, or at least like a transition in time*. The following argument explains what I mean by this.

Consider a case in which a consciousness event (call it x) is continued in a second consciousness event, y . There is one point of view, or way things seem, associated with x . There is a different point of view associated with y . Suppose that there is a subject whose history includes x and y . Then both x and y involve pieces of the experience of that subject. However, the subject never experiences both of these instances of seeming as simply being present at once. This is because the subject has no experience of x and y *together*. There is no consciousness event z such that both x and y exist for z . There is no consciousness event z such that all the facts which seem to be the case either at x or at y , seem to be the case at z . Hence a subject cannot experience both x and y as if they were present at once. At any consciousness event, either x seems present, or y seems present, or neither one seems present — but both cannot seem present. Thus, during y , it seems as though the contents of y are there *now*, while the contents of x are not

there now but are close to "now," or are just leaving the "now," or enter somehow into the experience which seems present "now." In other words, from the viewpoint of y, the connection between x and y seems rather like a change.

This argument can be stated less formally as follows. When one sits and stares at a statue, one sees the statue in a continuing way; first one sees it, then one sees it, and sees it, and sees it, and.... Each of these viewpoints involving the statue is a little different from the others; at very least, it involves a sensation or impression or *feel* of having looked a little longer than one had looked during the previous moment. For an experience to persist — to "take up time" or to "last" — is for the experiencer to pass through various slightly different viewpoints in this way. Yet a single viewpoint, by definition, cannot involve passing through various viewpoints in this way. Hence it cannot be felt as something lasting, in the normal sense of "lasting." It does not "go on and on." It must feel as though it were "here and gone" — here during one consciousness event, gone relative to other viewpoints which come after that event in the subject's history.

Thus, when consciousness events are linked by a subject history, their contents must include kinds of experience somewhat like those one normally associates with the passage of time. If one takes "subjective time" to mean the apparent succession of consciousness events along a subject's history, then subjective time *feels like time*. (Of course, many of the features of human time perception — such as long-term memory, expectation of the future, the

sense of time's length, the feeling of inexorability, etc. — may not be common to all possible subject histories.)

The consciousness events in a subject history form what William James called a "stream of consciousness."²² Consider a series of consciousness events connected into a subject history in the way I just described — that is, consciousness events a, b, c, d,... such that a exists for b, b exists for c, c exists for d, and so forth. The event b involves the continuance of a. Thus b is the consciousness event to which a gives way as subjective time passes. The consciousness embodied in b has the event a as part of its subjective realm, so to speak; when b seems present, a seems to die away. A similar continuation of consciousness goes on through c, d,... Each of these events has among its subjective facts the existence of the previous consciousness event. For each consciousness event, the previous "moment" of subjective time is the consciousness event that is just ending. Hence for the consciousness at b, some subjective facts involved in a are in the immediate past. Those subjective facts belong to the fading experiences that happened in the immediate past. We can think of the consciousness in b as a stage in a process of being conscious; the event a which precedes b in the chain also is a stage in this process. It is intuitively plausible to speak this way, because b involves the experiencing as *just past* of some things which for a were *present*. In this way the events a, b, c, d,... make up a single stream of consciousness. Those events are stages in what amounts to an ongoing process of having experiences, embodied at each moment in

some particular consciousness event. Each moment of consciousness in that process "lives on" through continuance into new moments.

The relation of continuance which ties together the stream of experience also provides that stream with an *experienced temporal order*. If a consciousness event y exists for a consciousness event x , then for x , y happens "just before" x . The event x involves continuance, which is a sort of appearance of what has just passed; what has just passed is y . Thus we can say that y is *immediately subjectively past* for x if and only if y is continued during x . We can define a subjective time order relation in terms of this relation: say that y is *subjectively past* for x if and only if either y is continued during x or there is a chain of consciousness events y, a, b, \dots, z, x such that y is continued during a , a is continued during b, \dots , z is continued during x . (Actually, we only need three consciousness events to construct this chain.) This definition captures what we mean when we say that one experience occurs before another in the stream of consciousness. One cannot plausibly regard a consciousness event of a subject as being past in subjective time unless, in subjective time, it once was *immediately past* — that is, unless one can trace a chain of experience back to the event, by tracing the relation of immediate pastness. Conversely, if an event x once was immediately subjectively past (that is, if the event is followed in subjective time by an event, which is followed by an event, ..., which is followed by an event which is immediately past), then it is intuitively correct to say that x occurred in the subjective past.

This characterization of subjective pastness does not presuppose the existence of physical time or of physical temporal order. Under ordinary conditions, our experiences unroll as physical time marches forward, but these two time orders are logically distinct. Subjective time order is a felt ordering of experiences; physical time order is established with the aid of clocks or similar physical means. As we have just seen, subjective time order can be defined independently of physical time. Even if it turned out that the physical world were illusory (and I am *not* arguing that it is), there still could be subjective time for conscious beings. The search for a physical explanation for time perception is an important scientific task, but we do not need such an explanation to know that subjective time is real. Whether x is subjectively past for y depends only upon the subjective facts associated with x and with y . (Earlier I mentioned that subjective time may stop while physical time proceeds, if a person becomes unconscious.)

Using this characterization of subjective pastness, we can frame definitions of other subjective temporal notions. For example, by recognizing that a is in the subjective future of b if and only if b is in the subjective past of a , we can obtain a definition of subjective futurity in terms of continuance.

The notion of subjective time discussed above should not be confused with other psychological notions about time. It tells us nothing about phenomena like the awareness of time's apparent length or the understanding of past events.²³ These phenomena are not part of the naked successiveness of experience which I call "subjective temporal order."

An Empty Objection Defeated

One possible objection to the above picture of subject history arises from criticisms of the notion of the stream of consciousness. Dennett, in particular, has questioned this notion. On Dennett's view, the contents of consciousness result from what amounts to the ongoing "editing" of the data of experience, not from one unique, consecutive process.²⁴ But even if Dennett's theory were right, it could not imply that consciousness does not consist of a single stream — provided that we take "consciousness" to mean "the possession of a way things seem" (recall Chapter 2). Even if the stream of consciousness were an illusion of some sort (as Dennett's theory suggests it is), there still would be a way things seem *in the illusion* — that is, there would be subjective facts and consciousness events. Given a particular way things seem, it might sometimes seem that another consciousness event of a particular kind just happened. According to the arguments in Chapter 4, this would mean that there really was such a consciousness event. (This would be the case even if no "conscious" processes had happened in the brain before the later consciousness event. In that case, the "earlier" consciousness event could come into being at the same physical time as the "later" one, yet still be earlier in subjective time.) A chain of consciousness events linked together by this relationship would constitute a subject

history. Hence even if Dennett's "Multiple Drafts model"²⁵ were right, it would not have any bearing on my conclusion that there exist streams of consciousness events, and that the life of a subject consists of a stream of consciousness events.

In my opinion, the stream of consciousness which Dennett's theory criticizes is not the same as the phenomenon which I am calling a "stream of consciousness." The stream of consciousness which Dennett rejects is essentially a series of successive "presentations"; Dennett argues that the presentations which this would require do not really occur.²⁶ The stream of consciousness which I am championing is simply a stream of successive *viewpoints*, whose real nature remains open. The consciousness events in the stream need not be or involve "presentations" of the sort which Dennett rejected. Hence the "stream" presented here is not necessarily the same as the stream which Dennett has criticized. When James investigated the stream of consciousness, I think he had the stream of viewpoints in mind. Note also that the stream of consciousness events need not really be temporally continuous (that is, continuous in physical, clock time); it need only seem continuous. Hence Dennett's objection to the view that consciousness is continuous²⁷ is irrelevant here.

My remarks in Chapter 2 about theories of consciousness are important to remember at this point. No theory of consciousness can force us to believe that there are no consciousness events or that no subjective facts are the case.

At most, such theories can only provide us with views about what those items really are. My account of the stream of consciousness utilizes certain relationships among consciousness events, without regard to what consciousness events really are (material? immaterial? behavioral?). Hence no tenable theory about the real nature of consciousness can contradict my account. Furthermore, my account is not a theory of consciousness and does not imply such a theory. I should mention again that Dennett's theory of consciousness does not attempt to refute subjects' claims about the way things seem.²⁸

Subject Identity During Periods of Unconsciousness

A subject can undergo a temporary lapse of consciousness without starting a new subject history and without any interruption of the flow of subjective time. My earlier remarks on anesthesia should make clear why this is the case. States of total unconsciousness such as deep anesthesia need not interrupt the subjective temporal succession of consciousness events. During ordinary waking consciousness, consciousness events continually transpire as physical time passes. Thus, there is a correspondence between the passage of subjective time and that of physical time. During anesthesia, subjective experience fails to flow during some interval of physical time. But *prima facie*, the stream of consciousness is not

interrupted; instead, the usual relationship between physical and subjective time is modified. Anesthetic states do not really break the stream of consciousness. They merely allow an unusual quantity of physical time to elapse during the transition between one temporal phase of that stream and the next. They also may prevent remembering of subjective facts from consciousness events shortly before the anesthesia.

The above remarks hold for states in which a person becomes totally unconscious — that is, undergoes no consciousness events during an interval of physical time. Most so-called unconscious states are not of this sort. Dreaming sleep is accompanied by some subjective activity and therefore is a segment of the subjective time stream, not a gap in it. Such a condition is not a genuine instance of unconsciousness; it is a condition in which the *content* of consciousness has become markedly altered. The same can be said for any other odd state of awareness in which some subjective life persists. Fugues, near-comas with some residual sensation, periods of what Leibniz called "minute perceptions,"²⁹ and the like do not pose any threat to the identity of the subject. (Whether such states can affect *personal* identity is a separate question.)

Three Technical Notes

In the rest of this chapter I will lay out some technical details of my theory of subject histories. The three technical

notes which follow will be of interest mainly to those with interests in logic or in the philosophy of logic; it is possible to skip these notes without loss of continuity. The first note shows how the ideas of subjective time and of subject history can be made rigorous. It also underscores the point that a conscious subject history is not a logical construction. The second note asks the question "To which ontological category does a subject history belong?" The third note examines some topological properties of subjective time, and some possibilities for unusual topologies of subjective time.

Note 1: How To Formalize Subjective Time

This note indicates how the concept of subject history might be formalized. I will point out one way in which this can be done within a second-order formalized language. (For the required logic and set theory, see texts on those subjects.³⁰)

Let F be a class (or, if one prefers, a property) of consciousness events. Define the *subjective precedence relation* on F as the transitive closure of the continuance relation on F . More precisely, say that a relation R is a subjective precedence relation on F if and only if the following three conditions are met: (1) F is the field of R ; (2) for all x and y in F , if x is continued in y then x bears R to y ; (3) R is transitive on F ; and (4) R has no subrelation besides itself which satisfies (1), (2), and (3). Then define a

subject field as a class F of consciousness events with the following properties: (1) F is *nonbranching* — that is, no x in F is continued by two distinct consciousness events in F or continues two distinct consciousness events in F ; (2) F is *maximal* with respect to continuance — that is, (2a) if x is in F and there is some consciousness event y which continues x , then some such y is in F , and (2b) likewise with "continues" replaced by "is continued by"; (3) F is the field of a subjective precedence relation R on F which is *connected* — that is, for any distinct x and y in F , either x bears R to y or y bears R to x . A subjective precedence relation is what we informally call a relation of subjective pastness or "beforeness." Finally, an object is a *subject history* if and only if it is the *mereological composite*³¹ of all consciousness events in some subject field. In other words, the subject history is the whole of which those consciousness events are parts. The subject history is not the subject field (and hence is *not* merely a logical construct), but is a concrete event or process. It is composed of the consciousness events in the subject field, which can be thought of as its temporal parts in subjective time.

Some readers may be bothered by the idea of a whole whose parts are consciousness events. If consciousness events actually are events, then this whole probably is unproblematical; after all, the consciousness events in a subject history are related to one another in a most intimate way, and usually are spatiotemporally contiguous as well. But in the most general case, consciousness events cannot be supposed to be events; all we know for sure is that they are

instances of seeming. It is difficult to imagine how instances of seeming which are not events could be the parts of a whole! I will address these difficulties in the next technical note.

The definition of subject history, whether in the rigorous form above or in the informal version given earlier, reveals the following important properties of subject histories. A subject history is a single stream of consciousness; it cannot be, for example, two parallel streams of consciousness, or a swarm of disconnected consciousness events. The connectedness condition on the subjective precedence relation R insures this uniqueness of the stream. The stipulation that the subject field is nonbranching implies that for each consciousness event x in the subject history, there is a unique, linearly ordered series of consciousness events in the history which lie in the *near* subjective past and future of x (provided that x has a subjective past and future). That is, some segment of subjective time around x has a linear topology. The maximality condition on a subject field insures two things: (a) if a consciousness event x in the history of a subject gives way to some consciousness event y (that is, if x is continued during some y), then some such y also is a part of the history of that subject; (b) if a consciousness event y in the history of a subject has some consciousness event x in continuance, then some such x is part of the history of the same subject as y . In other words, the subject history does not begin later than, or end earlier than, the stream of consciousness. Hence any consciousness event which is part of the same nonbranching "stream of

consciousness" as an event x will belong to the same subject history (or histories) to which x belong(s).

This definition of subject history captures the informal notion of subject identity which I explained informally above. Intuitively, two consciousness events are events in the career of the same subject if and only if they belong to the same subject history.

Note 2: The Ontology of Subject Histories

Intuitively, one may think of a subject history as an event — specifically, as a temporally extended event which has consciousness events as parts. If a consciousness event is indeed an event, then my definition of a subject history agrees with this intuition. However, there is no *a priori* guarantee that all consciousness events really are *events* in the usual sense, or are items that happen in physical time. Thus, we cannot rule out subject histories which are not events or which do not occur in physical time. However, we are safe in regarding a subject history as a certain kind of whole having consciousness events as parts. If the consciousness events really are events, then the history is an event.

A further question arises when we consider the whole which the consciousness events are supposed to form. If consciousness events really are events, then it is possible to assume that these events form a whole, especially in view of the intimate way in which the events are interconnected. This plausibility increases if the events are, for the most

part, contiguous in time and space — as neural events in a single brain might be. It is likely that all consciousness events are events, so a whole composed of consciousness events probably is no more problematical than any other events composed of multiple temporal parts. However, we have not assumed that consciousness events are events. Would instances of seeming which are *not* events form wholes in the required way?

The answer to this question is implicit in the definition of consciousness events as instances of seeming. In Chapter 2, I pointed out that the existence of an instance of seeming or consciousness event does not involve anything over and above facts about how things seem. There is nothing more to the existence of a consciousness event than the obtaining of certain subjective facts. A similar statement can be made about wholes composed of consciousness events. The claim that there is a subject history says nothing more about the world than does the claim that consciousness events of certain sorts exist. (The required sorts of consciousness events include consciousness events for which other consciousness events exist, and which are ordered by this interrelationship in a certain specific way.) This last claim, in turn, says nothing more about the world than does the claim that things seem certain ways in certain instances. Thus, the claim that there are subject histories is as secure as the claim that things seem certain ways. The ways things must seem to make a subject history exist are rather specific; certain instances of seeming must seem in certain other instances to exist, as detailed in the definition of a subject

history.

Note that we may interpret quantifiers over subject histories substitutionally, as we did for consciousness events (and for the same reason).

Those who truly detest the idea that instances of seeming form wholes are free to adopt some other view of what a subject history really is. For example, one might think of a subject history as a *property* of consciousness events. All the consciousness events in John's subject history could be regarded as possessing a common property — say, that of being a "John-consciousness event." One could just as well regard John's subject history as a class of consciousness events (that is, identify the history with its subject field). One might even think of a subject history as a state of affairs involving consciousness events. For example, one can take the real content of "there is a John-history" to be the fact that there are John-consciousness events and non-John-consciousness events in the world. All of these alternatives, particularly the one involving classes, amount to the use of logical constructions as subject histories. As I said earlier, my aim in this book is *not* to find logical constructions which will substitute for objects, but to learn something about the objects themselves.³² I mention these three alternatives, not because I advocate them, but because they allow those who reject my characterization of subject histories to continue reading the book. One can accept much of what comes later in this book without believing that subject histories are wholes made of instances of seeming.

One might wonder whether subject histories even need to

fit into any of the standard ontological categories. Entities as special as *changing viewpoints* or *streams of seeming* might not exactly fit under any other heading. Perhaps subject histories are just — subject histories!

Note 3: The Topology of Subjective Time

The relations of continuance and of subjective pastness have certain formal properties which possess clear psychological meanings. Some of these properties follow from the definitions of continuance and of subjective pastness; others cannot be obtained deductively, but are suggested by ordinary experience. Here I will review some of these properties very briefly.³³ This note presupposes a knowledge of the elementary theory of order, such as is discussed in texts on set theory.

Reflexivity. In ordinary experience, the relation of continuance is irreflexive; a consciousness event does not "contain" itself in the way in which a consciousness event "contains" another consciousness event in continuance. However, the definition of continuance offers no prima facie guarantee of this. Similarly, in ordinary experience subjective pastness is irreflexive; a consciousness event is not experienced later than itself. But the definition of subjective pastness does not guarantee this. Also, the irreflexivity of continuance does not imply the irreflexivity of subjective pastness.

Symmetry. Reflection on everyday experience suggests that continuance is antisymmetric. A human being normally does not have a consciousness event a, then have another consciousness event b in which a is continued, and then immediately have a again. However, the definition of continuance does not, *prima facie*, exclude this possibility. Also, we have no *a priori* guarantees that subjective pastness is antisymmetric. The antisymmetry of continuance does not imply the antisymmetry of subjective pastness. If subjective pastness failed to be antisymmetric, then there could be consciousness events x and y such that x is both before and after y in subjective time. This would happen if the topology of the subjective time of a subject were closed.³⁴ The irreflexivity of subjective pastness also could fail under these conditions. Such things might happen to a physical observer in a universe which has closed time or permits time travel. I do not know of a way to rule out this possibility.

Transitivity. In our ordinary experience, continuance is not transitive. If it were, then a subject could, at any moment in his/her history, notice all of his/her past experiences in continuance. Such a subject would experience his/her entire past as immediately past; that entire past would seem that it had "just happened." If a subject history (as I have defined it) were like this and also contained more than two consciousness events, then there would be branches in the subject history (a distinct

consciousness event would have to continue more than one consciousness event). The definition of subject history rules this out. Hence there cannot be a subject history (as defined above) in which continuance is transitive, unless there is a subject whose history contains only two consciousness events. For such a short-lived subject, continuance would be vacuously transitive.

Trichotomy and nonbranching. In ordinary experience, continuance does not obey the trichotomy law on consciousness events in a subject history. If x and y are consciousness events in the same subject history and x is in the distant subjective past of y , then x is not continued in y , y is not continued in x , and y is not identical to x . Subjective pastness, restricted to a single subject history, obeys the trichotomy law.

The trichotomy of subjective pastness is an important feature of subjective time. Subjective pastness in a subject history obeys a trichotomy law: for consciousness events x and y , either x subjectively precedes y , or y subjectively precedes x , or x is y . (Since we have not ruled out universes with closed time, we cannot generally regard these "or's" as exclusive.) This trichotomy law excludes cases in which two or more streams of consciousness are parts of the history of the same subject. For example, if a subject splits to give two subjects, the resulting pair of streams of consciousness do not make up the history of a single subject. (I will discuss puzzles about splitting and merging subject histories in Chapter 12.)

For partial orders, trichotomy is known to imply the absence of branches in the order. This implication does not hold in general for the subjective pastness relation; since we cannot rule out the possibility that this relation is topologically closed, we cannot be sure that it is a partial order. Hence a separate nonbranching condition is needed in the formal definition of subject history (recall Appendix A).

Local properties. Subjective pastness also has a significant local topological property: for a subject history with more than two consciousness events (or for any subject history which is not closed), the subjective pastness relation is a linear order when restricted to a sufficiently short segment of the subject history. This is a direct consequence of the definition of subject history.

Summing up: By using the definitions presented in this chapter, we can show that the subjective pastness relation is transitive, and is trichotomous (in a nonexclusive way) if restricted to a single subject history. Ordinary human experience suggests that for human consciousness under ordinary conditions, continuance is antisymmetric and does not obey trichotomy, and that subjective pastness is irreflexive and antisymmetric. For subjects having three or more consciousness events, continuance is not transitive. Subjective pastness behaves like a linear ordering over sufficiently short stretches of an ordinary (that is, non-closed) subject history.

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Notes

Bibliographical references, cited here by author and year, can be found in the "Works Cited" section of the book. Numbers following such citations are page numbers unless otherwise indicated.

Chapter 5. Conscious Beings and Their Histories

1. For background information and ideas about this problem, see for example Shoemaker and Swinburne 1989 and Hirsch 1982 (especially Ch. 10). For my understanding of this problem earlier in my career (though not for my position on it), I owe much to Shoemaker and Swinburne 1989 particularly.

2. This example is adapted from Shoemaker 1989, 86. I will discuss an example like this more thoroughly below.

3. For discussions (favorable, unfavorable, or otherwise) of such theories, see for example Carruthers 1986, 76-82; Grice 1941; Shoemaker 1970; Swinburne 1989, 8-13; Shoemaker 1989, 77-88; Hume 1739-40, Book I, Part IV, Section VI (pp. 261-262). The term "quasi-memory" is used especially in Shoemaker 1970 (272, 271 and elsewhere). Shoemaker 1989 (77-82) and Swinburne 1989 (8-11), among other authors, discuss a classic theory of this sort due

to Locke. Grice (1941, 342) discusses and rejects a view on which a kind of remembering of a state just before the present one establishes personal identity. The role of *immediately preceding experience* in this view matches that in the theory I am going to propose. The account at which Grice finally arrives in Grice 1941 is quite different from my account.

4. James 1884, 146. There are similarities between James' view of the stream of consciousness and the view I will present here. In particular, James noted that "earlier segments [of the stream] become objects for the later" (James 1884, 167, footnote). He entertained, but rejected, the view that this kind of unity of the stream simply *is* the ego (James 1884, 167, footnote); he attributed to some Hegelians a view rather similar to this view he rejected (James 1884, 149, footnote).

5. For remarks on personal identity after memory loss, see Swinburne 1989, 24-25 and Shoemaker 1989, 86-88.

6. James 1884 (though James' aim there was not to solve the problem of personal identity).

7. Foster 1979.

8. Shoemaker 1989, 86-87. For other relevant remarks on total amnesia, see Swinburne 1989, 24-25.

9. The example here is based on one from Shoemaker (1989, 87-88); I have altered some points and added the conclusion about killing. Green and Wikler (1980, 69) give a similar example, though apparently with a more thorough obliteration of brain characteristics (and with a different philosophical purpose).

10. See Swinburne 1989, 23-25, on personal identity questions about disembodiment, re-embodiment, and survival of death. On p. 25, Swinburne discusses the question of personal survival without memory.

11. *Ibid.*

12. Time as experienced by the subject of consciousness has been studied by Foster (Foster 1979, 175-176) and by Russell (Russell, 1948, 210-217), among others. Russell uses the terms "subjective time" and "objective time" (Russell 1948, 212), and refers elsewhere to "a public and a private time" (Russell 1912, 32). My ideas on the topic differ from these authors' ideas in crucial ways, though, as I have pointed out elsewhere, I owe intellectual debts to each.

13. Shoemaker 1989a, 145-147. See also Shoemaker 1989, 130-132.

14. Shoemaker 1989, 130.

15. Hirsch 1982, 286-301.

16. In Foster 1979. The quote is from p. 177.

17. The items unified into a subject history are quite different (consciousness events on my view, "presentations" on Foster's (1979, 175)), as are the relations which unify those items (continuance on my view, instead of Foster's "double overlap" (176)). My account of the subject also resembles Russell's and Carnap's views in certain respects (see chapters 1 and 3 in the present book, as well as note 32 to this chapter).

18. Relevant experiments and ideas are discussed in Dennett 1991, 114-115, 139-170.

19. See Dennett 1991, 119, 125.

20. Locke 1689, Book 2, Chap. 27 (p. 336).
21. Foster 1979, 182.
22. James 1884; the phrase itself is used on p. 146. (I should mention that James' aim in that essay was not to solve the problem of personal identity.)
23. On some psychological aspects of time, see for example Krech, Crutchfield and Livson 1969, 98, 228-229.
24. Dennett 1991, 113; see also 111-112, 253-254.
25. Dennett 1991, 111. The model is discussed in Dennett 1991.
26. Dennett 1991; particularly 135, 144, 166, 407; "'presentations'," 169 (see also 107).
27. Dennett 1991, 356.
28. Dennett 1991, 96-97.
29. Leibniz 17xx, paragraph 21 (p. 151). See also Leibniz 17xx, paragraphs 19-20 and 22-24 (pp. 150-151), and the modern commentary of Schrecker 1965, xv.
30. For example, Church 1956 and Drake 1974.
31. Mereology (the formal theory of wholes and parts) is discussed in an accessible way, in the context of the philosophy of mathematics, in Lewis 1991 (see especially pp. 1-3 and 72-74).
32. The logical constructions used by Russell (see for example Russell 1918, especially 143-146, and Russell 1924, 163-166) and Carnap (Carnap 1928, especially secs. 132, 136, 163) were, in my view, such substitutes. Russell's and Carnap's accounts of the self are different in central respects from mine. According to their accounts, the history of the self is a class of experiences (taken to be entities)

unified by a relation which can involve long-term memory (see Russell 1918, 148-150; Carnap 1928, pars. 78 (pp. 127-128), 108 (pp. 178-179), 120 (pp. 188-189), 132 (pp. 203-205)).

33. For a general discussion of the topology of time, covering some of the properties mentioned here, see Newton-Smith 1980, 48-54.

34. On closed time see for example Newton-Smith 1980, 57-65.

Works Cited

(Note added later: This list pertains to the entire book, not just to the excerpts.)

This list contains all works used as sources of information or ideas in this book. It is not a comprehensive bibliography of any sort. Many of the topics discussed in this book are subjects of vast bodies of published literature; others, such as introductory physics, are covered in many good books. In cases of these sorts, I concentrated on typical reference sources which I felt would be useful to the reader, or which I personally found helpful. (In areas of active research, these may not be the most current works available.) No slight is intended toward any work not mentioned in this list.

Dates following author's names are meant to be (approximate) publication dates unless a separate publication date is given, in which case they are meant to be (approximate) dates of first publication or creation. The latter dates come from the works themselves or their front matter, or occasionally from Durant 1953. Dates listed in this section should not be treated as exact; some may be educated guesses.

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About This Document and *From Brain to Cosmos*

Mark Sharlow's book *From Brain to Cosmos* was out of print at the time this document was prepared (late 2010). Most of the chapters of *From Brain to Cosmos* appear in the following documents, which may be available online:

“An Introduction to Subjective Facts” (chaps. 2-3)

“Knowledge of How Things Seem to You” (chap. 4)

“Personal Identity and Subjective Time” (chap. 5)

“Subjective Facts and Other Minds” (chap. 6)

“Time and Subjective Facts” (chaps. 5, 7-9)

“Conscious Subjects in Detail” (chaps. 5, 10-12)

“Beyond Physicalism and Idealism” (chap. 13)

“Which Systems Are Conscious?” (chap. 14)

Each of the above documents has “Readings in *From Brain to Cosmos*” as its subtitle and Mark F. Sharlow as its author.

Copies of the printed book may be available through sellers of used books.

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