THE DIVISION OF INDIVIDUALS

by

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ABSTRACT

While Jones' old heart is failing, strict copies of his brain are implanted into the brainless bodies of Smith and Brown. Soon two individuals awaken, each claiming to be Jones. Could each of these two persons be Jones? This is the puzzle John Perry tackles in "Can the Self Divide?" and it is also the central problem of this thesis. Perry develops three semantic theories, the branch language, the person-stage language, and the lifetime language, each grounded on a different concept of what a person consists of. Eventually he rejects the first two languages in favor of the third. In Chapter II I examine Perry's reasons for rejecting the branch language and contend that the branch concept of a person need not be blamed for the branch language's shortcomings. In Chapter III I inspect the person-stage language and uncover a fault much more severe than those Perry complained of; the person-stage language robs persons of properties we know them to have. Hence it cannot account for normal cases of personal identity, let alone complex ones like Jones'. This crippling fault also afflicts Perry's final semantic theory, the lifetime language; the theory and its defects are described in Chapter IV. In Chapter V David Lewis' contributions are reviewed;
there I maintain that various parts of his theory conflict, notably his analysis of personal identity and his theory of person counting. Finally, Chapter VI contains my own attempts at resolving the problems encountered by Perry and Lewis. The theory I present is based on the branch concept of a person, as is the branch language and Lewis' theory; its analysis of personal identity, though, differs radically from either Lewis' or Perry's, being couched not in terms of strict identity but in terms of identity at a given time. As far as I can tell, the theory is free from any of the defects plaguing its forerunners; its philosophical foundation, however, needs much clarification.

Dr. Howard Jackson
Thesis Supervisor
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CHAPTER I

INTRODUCTION

Brown, Jones, and Smith enter the hospital for brain rejuvenations. (In a brain rejuvenation, one's brain is removed, its circuitry is analyzed by a fabulous machine, and a new brain is put back in one's skull, just like the old one in all relevant respects, but built of healthier grey matter. After a brain rejuvenation one feels better, and may think and remember more clearly, but the memories and beliefs are not changed in content.) Their brains are removed and placed on the brain cart. The nurse accidentally overturns the cart; the brains of Brown and Smith are ruined. To conceal his tragic blunder, the nurse puts Jones's brain through the fabulous machine three times, and delivers the duplicates back to the operating room. Two of these are put in the skulls that formerly belonged to Brown and Smith. Jones's old heart has failed and, for a time, he is taken for dead. In a few hours, however, two individuals wake up, each claiming to be Jones, each happy to be finally rid of his headaches, but somewhat upset at the drastic changes that seem to have taken place in his body. We shall call these persons 'Smith-Jones' and 'Brown-Jones'. The question is, who are they?

So begins "Can the Self Divide?", John Perry's captivating paper on the division of individuals. Who indeed are Smith-Jones and Brown-Jones? Certain theories of personal identity seemingly confirm Smith-Jones' and Brown-Jones' assertions. These theories, briefly, analyze personal identity in terms of memory or in terms of continuity of consciousness. Had only one body received a copy of Jones' brain these theories undoubtedly would imply that the resulting person is Jones.

So one might well expect that applied to our present story, where not one body but two receive a copy of Jones' brain, these same theories would imply that each of the two resulting persons is Jones. And apparently they do yield that result. Since Smith-Jones and Brown-Jones possess all of Jones' memories, beliefs, intentions, etc., their brains being exact duplicates of Jones', it seemingly follows that

1) Smith-Jones is the same person as Jones

and

2) Brown-Jones is the same person as Jones.

But if they are each the same person as Jones, then by the symmetry and transitivity of identity, it further follows that

3*) Smith-Jones is the same person as Brown-Jones.

Quite plainly, however, Smith-Jones and Brown-Jones are not the same person. Even though they each received a strict copy of the same brain, Smith-Jones and Brown-Jones are as distinct from one another as are any two normal human beings. Sentence 3*, then, is false, and the theories of personal identity which led to this falsehood must themselves be false.

To an advocate of the theories under suspicion the choice is clear: deny that personal identity is transitive and symmetric, or deny that the theories entail that Smith-Jones and Brown-Jones are each the same person as Jones. In essence Perry pursues the latter course. In point of fact,
however, his defense is quite elaborate. He develops a semantic theory, the lifetime language, which assigns truth-values to personal identity statements, and along with this theory, he provides a theory of how persons are counted, the lifetime theory of person-counting. But before presenting the lifetime language, Perry offers and investigates in his paper two other such theories, the branch language and the person-stage, both of which he eventually rejects. Just what these theories entail and how they differ will become clear, I hope, as each is examined in turn in the next three chapters. Then, in Chapter V, David Lewis' alternative to Perry's languages will be scrutinized. Finally, Chapter VI will introduce my own attempt at improving upon both Lewis' and Perry's solutions.
CHAPTER II

THE BRANCH LANGUAGE

All three of Perry's languages present the same overall design. First, they all build on the same foundation: they all take person-stages and the R relation as starting-points. Person-stages are the temporal parts of a person; they represent a person as he is and the properties he has at a given time in his life. Since, in all three languages, they act as building blocks from which persons are assembled, person-stages, as well as their properties, must be presumed to be readily identifiable. In Perry's fictitious example the person-stages are Jones' pre-operative stages, Smith-Jones' post-operative stages, and Brown-Jones' post-operative stages.

The R relation is a relation which holds between person-stages. It expresses memory or continuity of consciousness or any other psychological criterion used by the theories of personal identity in question.\(^1\) If j is an

\(^1\)Letting a single relation R stand for any such criterion may call for a bit of redefining, since not all of these criteria exhibit the same logical characteristics. For instance, memory is usually antisymmetric, continuity of consciousness is not: if a stage s is available in memory to a stage r, r is not available to s. To remove the discrepancy,
arbitrarily chosen pre-operative stage of Jones and sj and bj are arbitrarily chosen post-operative stages of Smith-Jones and Brown-Jones, respectively, then according to Perry's story, sj is R-related to j, bj is R-related to j, but sj is not R-related to bj.

Second, all three languages exhibit the same structure. Each consists of three elements: a theory or concept of what a person is, a theory of naming, and a theory about the truth-conditions of sentences of certain types. The theory of persons tells us which groups of person-stages form persons; the theory of naming says what name or names these persons have, if they have any at all; and the theory about the truth-conditions of certain kinds of sentences gives us what properties these persons have, including which persons are the same and which are not.

A. The branch language's theory of persons

To state clearly what a person is in the branch language we need one definition. Call a set of person-stages let R' be the relation expressing memory and let R be the relation holding between person-stages a and b just in case a has R' to b or b has R' to a. R so defined is symmetric. Furthermore, R' will be taken to be reflexive. In the present work as in Perry's, then, the relation R is taken to be symmetric and reflexive but not transitive.
a 'branch' if and only if all its members have the relation R to one another and no stage that has R to all the members is not itself a member. A branch, then, is just a set of a certain kind, one in which every member is R-related to every other and which is the largest such set; for short, a maximal R-interrelated set of person-stages. Applying this definition to the person-stages under scrutiny we find that they compose two branches. One is formed by all the pre-operative stages of Jones together with all the post-operative stages of Brown-Jones, the other by all the pre-operative stages of Jones together with all the post-operative stages of Smith-Jones. However, the set containing all the person-stages in both these branches, that is, the set of all person-stages under examination, is not itself a branch.

The branch language makes this conjecture: persons are branches. Every branch forms a person. According to the branch language, therefore, all of Jones' pre-operative stages taken with all the post-operative stages of Smith-Jones compose one person; and those same stages of Jones grouped with all the post-operative stages of Brown-Jones form another person. As illustrates the fact that these two

---

As Perry points out (Perry, p.472), the identification between persons and branches need not be made. All that matters is that a one-to-one correspondence exist between branches and persons. Still, the identification is made for the sake of simplicity.
persons have in common their initial stages, the concept of a person embodied in the branch language allows the sharing of stages among persons, it being possible for a person-stage to be a member of more than one branch.

B. The branch language’s theory of naming

The branch language supposes, first, that names are assigned to person-stages, that is, that names are assigned by the picking out of a person-stage; and second, that the name names the person—the branch—of which that person-stage is a member. If the person-stage to which a name is assigned is a member of more than one branch, the name fails to refer; it names no one.

It is easy to see that the two branches obtained above are names 'Smith-Jones' and 'Brown-Jones'. The name 'Smith-Jones' was assigned by isolating some stage sj, and it is a member of only one branch; so 'Smith-Jones' is the name of that branch. In like manner, 'Brown-Jones' was assigned by picking out a stage bj, which belongs to only one branch; so it names that branch. What about the name 'Jones'? Does it name any of the two branches? To answer that question we must suppose that the name 'Jones' was assigned at baptism by someone’s pointing to some j, a pre-operative stage of Jones, and saying 'Let us call this person
'Jones', just as 'Smith-Jones' and 'Brown-Jones' were assigned by Perry's pointing at post-operative stages of Smith-Jones and of Brown-Jones and declaring, "We shall call these persons 'Smith-Jones' and 'Brown-Jones'." Thus the theory of naming implies that the name 'Jones' fails to refer, because the stage isolated at baptism belongs to more than one branch. Neither branch, therefore, is named 'Jones'.

C. The branch language's truth-conditions

In the branch language a sentence of the type

N has F at t,

where 'N' is a personal name, F a property, and t a time, is true if and only if the branch referred to by 'N' contains a person-stage that occurs at t and has property F. If the branch contains no such person-stage or the name N does not refer, the sentence is false.

Here a qualification is in order. As just stated, the truth-conditions are patently wrong. Some properties that a person has at a given time depend not on the person's person-stage having the property at that time but on one of the person's future or earlier person-stages having a different property at that earlier or later time. As an illustration imagine Johnson, a normal patient, now in room 80 but about to be moved to room 90. He now has the property of being about to be in room 90. The sentence expressing that
fact, 'Johnson now has the property of being about to be in room 90', is true if and only if Johnson has, at a later time, a person-stage that is then in room 90 and not, as the truth-conditions imply, if and only if he now has a person-stage which is about to be in room 90. Because the existence of a person-stage is more or less momentary, no person-stage can be about to be in room 90. It is the person who is about to be in room 90, not the person-stage.

Consequently, if we are to retain the truth-conditions expressed previously, we must restrict the properties that F can stand for to those that make the truth-conditions hold, properties such as 'being in room 80'. As far as I can tell, this restriction is equivalent to Perry's stipulation that F represent a basic property of a person, a property a person has at a given time in virtue of events that occur only at that time (Perry, p.470). A person's non-basic properties at a time are those which he has wholly or partly in virtue of events that occur at other times. Like Perry, in order to simplify as much as possible the problem at hand, I will assume that the non-basic properties a person has at a given time are a function of his basic properties at that and other times, and then I will ignore non-basic properties altogether.

What do the truth-conditions given so far imply about Jones, Smith-Jones, and Brown-Jones? For Jones the
implications are gloomy. The name 'Jones' being improper, any sentence of the form 'Jones has F at t', for any time t, is false. Thus even though we know, for example, that Jones entered hospital, the sentence stating that he did so is false, if we lend credence to the branch language.

For Smith-Jones and Brown-Jones the consequences are brighter. Their names refer, so sentences containing them are not necessarily false. As we previously mentioned, Brown-Jones and Smith-Jones share their pre-operative stages. It follows straight away that, for any time t prior to the operation, Brown-Jones has F at t if and only if Smith-Jones has F at t, since the truth-value of 'BJ has F at t' and of 'SJ has F at t' depends on the properties of exactly the same person-stage. Hence whatever Brown-Jones did, felt, or thought prior to the operation, Smith-Jones did, felt, or thought, and at the same place and time as Brown-Jones; and vice-versa. A like generalization cannot be made for times following the operation, the stages of Smith-Jones and those of Brown-Jones being then distinct.

Furthermore, the person-stages that Brown-Jones and Smith-Jones share are, we know, stages of Jones. Therefore anything we would say Jones experienced before the operation, the branch language would say Smith-Jones, and also Brown-Jones, experienced, at the same time and place and in the
same manner as did Jones. So Smith-Jones entered hospital, Brown-Jones entered hospital. They did all the things they remember doing. But are they Jones? Were they one another? These questions bring us to the branch language's truth-conditions for statements of personal identity.

In the branch language a sentence of the type

\[
N \text{ is identical to } M,
\]

where 'N' and 'M' represent personal names, is true if and only if the branch referred to by 'N' and the branch referred to by 'M' are identical. If either 'N' or 'M' is improper, the sentence is false.

Accordingly, the sentences

4) \(SJ^3\) is identical to J

and

5) BJ is identical to J

are false, since they both contain a name that fails to refer, 'Jones'. The sentence

\[
SJ \text{ is identical to BJ}
\]

is also false. Though the two names in it do refer, the branches they refer to are not identical. Therefore the sentence

6) \(SJ\) is not identical to BJ

is true.

\(^3\text{Wherever it is convenient to do so, the name 'Jones' will be abbreviated to 'J', 'Smith-Jones' to 'SJ', and 'Brown-Jones' to 'BJ'.}\)
From the branch language, then, follow a number of implications about the persons in Perry's fictional example. These implications, or predictions, as we will call them, can be used to evaluate the language. But before examining them in detail and comparing them to what we would say about the example, we should verify that the branch language is adequate to Perry's purpose.

D. The adequacy of the branch language

Perry's chief aim in constructing the branch language is to save from contradiction a certain theory of personal identity, the theory that for any arbitrarily chosen person-stages a and b, a and b belong to the same person if and only if the R relation holds between them. Applied to his fictional example, where stage sj has R to stage j, stage bj has R to j, but sj does not have R to bj, the theory apparently implies that

1) SJ is the same person as J
2) BJ is the same person as J
3) SJ is not the same person as BJ,

which are inconsistent unless the relation of being the same person as is intransitive or not symmetric, a supposition Perry is unwilling to make.

In our evaluation of the branch language, therefore,
we should verify, first, that the theory of personal identity under fire does bear upon the branch language, for if it does not, the enterprise of constructing that language was beside the point; second, that under the branch language analysis of identity statements the relation of being the same person as does come out to be transitive, symmetric, and reflexive, as Perry wishes it to be; and third, that sentences 1, 2, and 3 are not all implied by the branch language, for if they are, the branch language would indeed lead to contradiction.

First, then, how does the branch language bear upon the theory of personal identity in question? In this way: the concept of a person which is incorporated in the branch language implies the theory in question but is not implied by it. The theory, since it is a universally quantified biconditional, can be split into a conjunction of two conditional statements: for any person-stages x and y, chosen arbitrarily,

A) if a person contains both x and y, then x and y are R-related

and

B) if x and y are R-related, then some person contains them both.

Now statement A, which can be expressed in logical notation by

$$(x)(y)(\exists z (Pz \& xgz \& ygz) \rightarrow Rxy),$$
is easily shown to be not merely implied by but actually equivalent to

\[(z)(Pz \rightarrow (x)(y)((x \epsilon z & y \epsilon z) \rightarrow Rxy)),\]

which simply says that all a person's person-stages are R-related. (Here, x and y range over person-stages, z ranges over sets of person-stages, P stands for the property of being a person, and R stands for the R relation.) Since the branch language defines a person to be a set of R-interrelated person-stages which is maximal, its concept of a person directly implies statement A.

Statement B, which can be expressed in logical notation by

\[(x)(y)(Rxy \rightarrow \exists z (Pz & x \epsilon z & y \epsilon z)),\]

says that for any person-stages x and y that are R-related there is at least one person containing them both. That statement is also implied by the branch language concept of a person. The proof is as follows. Assume that persons are indeed maximal R-interrelated sets of person-stages, and assume also that Rab is the case, that is, that a is R-related to b, for some arbitrarily chosen person-stages a and b. The set consisting of these two person-stages either is a person or it is not. If it is, fine; the proof is complete, since a and b were chosen arbitrarily. If the set is not a person, then either the set is not R-interrelated, or there is another element, say c, which is R-related to both a and b. This
set is $R$-related, however, since $Rab$ (by assumption) and $Raa$ and $Rcc$ ($R$ being reflexive); so it must be the case that there is such an element $c$. Well, then, consider the set formed by $a$, $b$, and $c$; either it is a person or it is not. If it is, fine; the proof is complete. If it is not, it must be the case that there is another element, say $d$, which is $R$-related to $a$, $b$, and $c$, since the set consisting of just those elements is $R$-related. And so on, until a set is formed which indeed is a person. That this process will not go on interminably is insured by the fact that no person is eternal. For any given pair of elements $a$ and $b$ that are $R$-related, therefore, we can always construct a person which will include them both. Statement $B$, then, also follows from the definition of a branch.

Hence, from the hypothesis that persons are branches, we can derive both $A$ and $B$, and so the branch language implies the theory of personal identity Perry defends. His purpose is thus fully served; for should the branch language prove to be consistent, so would the theory of personal identity. Whether the branch language is in fact consistent is another matter, which remains to be proved. All we know so far is that the theory of personal identity is consistent if the branch language is.

Second, we should check that the relation expressed by 'is the same person as', the relation of personal identity,
generally believed to be transitive, symmetric, and reflexive, does turn out to have those properties under the analysis provided by the branch language. A glance at that language, however, reveals no truth-conditions for personal identity statements, statements of the form 'N is the same person as M', but just those for sentences of the kind 'N is identical to M'. The omission manifests Perry's assumption that a sentence of the type 'N is the same person as M' not only is equivalent to but is in fact synonymous with one of the form 'N is identical to M', where 'identical' is construed as denoting strict or Leibnizian identity, the relation everything bears to itself and only to itself. Perry is well aware of this assumption; proof is found in his discussion of the other two languages. For example, he writes on p.486:

Finally, the lifetime language, like the branch language but unlike the person-stage language, allows us to mean by our words what we think we mean, to wit, identity by 'is the same person as' and so forth.

In the branch language, then, statements of personal identity are presumed to be statements of strict identity between persons and hence are to be analyzed in terms of strict identity. Consequently the relation expressed by 'is the same person as' does turn out to be transitive, symmetric, and reflexive, since under the branch language analysis, it has all the properties of strict identity.
Third and last, we must verify that sentences 1, 2, and 3 cannot be obtained from the branch language. Since these sentences contain the predicate 'is the same person as', we must, in order to find their truth-value, again rely on the branch language's hypothesis that statements of personal identity are just statements of strict identity. Under that assumption, 1, 2, and 3 are synonymous to

4) SJ is identical to J,
5) BJ is identical to J,
and
6) SJ is not identical to BJ.

As we explained in section C. above, the first two of these sentences are false and the third is true. Sentences 4 and 5 are false because they contain an improper name, 'Jones'; sentence 6 is true because its denial, or rather the sentence of which it is the denial, is false, the branch referred to by 'Smith-Jones' not being identical to the branch referred to by 'Brown-Jones'. Therefore, not all of 1, 2, and 3 are true, and so the reasoning purporting to show that the theory of personal identity in question is inconsistent just does not apply. The branch language, at least on this account, appears to be consistent.

All that remains to be checked, then, is how well the branch language accords with what we would say about Perry's example. This we tackle in the remaining sections of this chapter.
E. Perry's evaluation of the branch language

Perry junks the branch language. He explains why in the following passage (Perry, pp. 472-3):

What are the merits of this view? Is our concept of a person the concept embodied in the branch language? I think not. The mentalist [for Perry, any defender of theories of personal identity like the ones in question], in adopting this solution, would be leaving the ordinary man far behind; for the ordinary man is not willing to admit that there was not a single person, Jones, before the operation, doing all the things Smith-Jones and Brown-Jones seem to remember doing. . . . it seems clear that we are reluctant to abandon the principle that each person-stage identifies a person, so that if we assign a name to a person-stage, we cannot but have named a person.

Perry rejects the branch language because its concept of a person implies, he believes, that the person we call 'Jones' is not really a single person before the operation. Stage j belongs to two branches and hence, Perry reasons, two persons exist at that time; the person we call 'Jones' is actually two persons before the operation. But that conclusion is somewhat implausible, and therefore we must discard the concept of a person that gave rise to it.

That reasoning, however, presupposes in addition to the branch language concept of a person a certain theory of counting which is not mentioned in the branch language: that the number of persons alive at a given time corresponds to the number of branches having a person-stage at that time; more precisely, that the number of persons alive at a time,
corresponding to each person-stage existing then, is equal to the number of branches having that person-stage as a member. Since it is only in conjunction with a theory of counting that the undesired conclusion is derived from the branch language theory of a person, that concept of a person should not be rejected on the basis of that conclusion alone; for it may be the theory of counting which is at fault and not the theory of persons. Alternative theories exist which give the correct count; whether such theories are viable will be discussed in a later chapter (Chapter V). For now we will only point out that Perry's rejection of the branch language's concept of a person depends on the correctness of the theory of counting presupposed.

Though the branch language, by containing no theory of counting, leaves it open whether there is a single person before the operation or not, it does commit itself on two points: no one is named 'Jones', and all sentences of the form 'Jones has F at t' are false. No one is named 'Jones' because, according to the branch language theory of naming, the naming procedure misfires, no single branch containing stage j. Hence the name 'Jones' fails to refer, and all sentences of the form 'Jones has F at' are false, according to the branch language's truth-conditions.

Do these predictions of the language match what we would say about Jones? Clearly they do not. First, there
is no doubt, somebody in the story is called 'Jones', even though we are not certain of what becomes of him after his brain is triplicated. It is Jones who enters hospital along with Brown and Smith, for instance, and it is Jones whose heart fails after the operation. Evidently, then, there is a Jones in the story, at least before the operation. For us the naming procedure does not malfunction as it does in the branch language.

Second, we would not say that all sentences of the form 'Jones has F at t' are false. Some we take to be true, for example, 'Jones entered hospital some time before the operation'; that is, 'Jones has at some time prior to the operation the property of entering hospital'. Moreover, others are false not because 'Jones' fails to refer but because Jones just did not have the property ascribed to him; for instance, 'At no time did Jones enter hospital'.

The branch language, then, makes two predictions that do not agree with the facts—what we would say about Jones—and so, on that account, is inadequate. This is probably part of Perry's meaning when he says, "... for the ordinary man is not willing to admit that there was not a single person, Jones, before the operation, doing all the things Smith-Jones and Brown-Jones seem to remember doing" (Perry, pp. 472-3). That is, not only would the ordinary man say that there was a single person doing all the things
they remember, or seem to remember, doing; he would also say that that person was named 'Jones'.

But that these two predictions do not match the facts does not mean, or does not necessarily mean, that the concept of a person which is at the base of the branch language is itself faulty. Other elements of the branch language enter into the derivation of the predictions at odds with the facts, and those elements may be the ones to blame, not the concept of a person. For instance, the prediction that no one in the story is named 'Jones' stems not just from the branch language's concept of a person but also from its theory of naming. Similarly, the prediction that all sentences of the type 'Jones has F at t' are false involves the theory of naming and part of the branch language truth-conditions as well as its concept of a person. How does one decide which part of the language is faulty and which is not, especially when the entire language may be faulty? Well, perhaps the surest way of exonerating the branch language's concept of a person is to offer an alternative branch language, a language based on the same concept of a person as the branch language but containing a different theory of naming and different truth-conditions, and then to show that this alternative language is viable, with all or at least most of the virtues of the branch language but none of its vices. That avenue will be explored in the last chapter of
the present work. David Lewis, in his paper "Survival and Identity," follows a similar route; his contribution will be reviewed in Chapter V. Perry, for his part, takes a wholly different approach. He discards the branch language's concept of a person and devises a language based on a different concept of a person. Perry's alternative language and the alternative to it will be examined in Chapters III and IV, respectively. But for now, we continue our investigation of the branch language.

F. Additional flaws in the branch language

Up until now in our evaluation we have compared the branch language's predictions with what we have called the "facts," what we know with certainty, or almost with certainty, about Perry's example, such as that someone in the story is called 'Jones', that he entered hospital, and that he was one person before the operation, not two. These "facts" are not totally beyond doubt; one might question, for instance, whether baptism can be effected by someone's pointing to a person-stage and saying, "I hereby name you 'Jones'." But this procedure is so similar to actual baptism ceremonies, if not identical, that there is little room

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to doubt that persons can indeed be named in this way. Or one might wonder whether Jones, before the operation, even though he has only one body and one mind and is normal in practically every respect, is not actually two persons because he will later be divided into two persons, each of whom was him (supposing, of course, that he does divide in this way). Again, the supposition that he was two persons before the operation is not absurd, but it is one we would resist, because we do not, when counting the number of persons, say, in a room, consider what will happen to them once they will have left the room; we just count them without paying attention to their future. These facts, then, though not positively beyond suspicion, nonetheless are quite certain, certain enough for us to expect the branch language (and other languages as well) to agree with most of them, or at least not to contradict them. There is another realm of considerations, however, that are often flimsy, which usually go by the name of 'intuitions'; these we dare hope a language will clarify or perhaps even corroborate. It is to those considerations that we now turn. Since we have already declared the branch language inadequate, our discussion will be academic in one respect. Still, it will be profitable, as it will serve to introduce a few cardinal issues.

In section D above we saw how the fact that sentences 1 and 2 are false and sentence 3 true renders the theory of
personal identity Perry defends immune to the charge of inconsistency. But with this immunity come a few problems for the branch language. We remarked in our examination of the branch language's truth-conditions (in section C above) that the following equivalence holds for any time \( t \) prior to the operation:

\[
\text{SJ has } F \text{ at } t \text{ if and only if } BJ \text{ has } F \text{ at } t.
\]

Whatever property SJ has before the operation, BJ has, and vice-versa. Before the operation, SJ and BJ have exactly the same properties, and moreover, each has them at the same time and place as the other. This remarkable coincidence is easily explained: SJ and BJ share stages before the operation. At any time prior to the operation, SJ's stage at that time is precisely BJ's stage, and vice-versa. In other words, if BJ stands before me sometime prior to the operation, so does SJ; and if I point to SJ, I point to BJ. That their stages are identical before the operation, then, strongly suggests that at that time, SJ and BJ are the very same person. The one is the other, at least before the operation. The fact that they are the same person at that time would explain why, prior to the operation, the above equivalence holds.

Yet, concerning the sameness of BJ and SJ, the branch language makes only one statement: BJ and SJ are not the same person. While it seems that, before the operation, BJ and SJ
are the same person, but after the operation, different persons, the branch language concludes only that BJ and SJ are different persons. What appears to be a relation that varies with time—before the operation BJ and SJ are the same, after the operation they are not—the branch language treats as unvarying.

A similar argument can be advanced about the relationship between SJ and Jones, and BJ and Jones. The properties that SJ and BJ have in common before the operation are, we know, properties of Jones, though the branch language does not ascribe them to him, the name 'Jones' being improper in that language. We know the properties are Jones' because the stages BJ and SJ share are, as we would say, stages of Jones. So it seems that before the operation SJ and Jones are the same person and BJ and Jones are also the same person. Again the branch language does not reflect the situation before the operation:

1) SJ is the same person as J

and

2) BJ is the same person as J

are both false, with no reference to time.

The branch language's truth-conditions for personal identity statements, then, though they make no mention of time, describe only the situation as it stands after the operation. In fact the truth-values they give are the only ones possible which will correctly describe the situation
as it stands after the operation, if the relation of same-
ness is to retain its usual properties and the argument
against the theory of personal identity is to be defeated.
Sentence 3

3) SJ is not the same person as BJ
appears to be clearly true after the operation; therefore
if the argument against the theory Perry supports is to be
neutralized, one of sentences 1 and 2 must be false; and
hence both must be false, there being between SJ's relation
to Jones and BJ's relation to Jones no difference that would
warrant only one of 1 and 2 being false and the other true.
The truth-values the branch language gives to 1, 2, and 3,
then, are just the ones we would expect for after the oper-
ation; but unfortunately, they are the opposite of what we
would expect for before the operation. In short, the branch
language's truth-conditions for personal identity statements
lack a temporal perspective.

Perry would agree with this assessment. His intu-
tion also is that, before the operation, SJ, BJ, and Jones
are all the same person. Proof is that he presents two
alternatives to the branch language; the first, he says,
"allows the mentalist to say just what he wants to say about
the example" (Perry, p.479); the second he accepts as definitive;
and both imply that before the operation, BJ, SJ, and Jones
are all the same person.
But here Perry faces a grave problem, as does anyone wanting to claim both that statements of personal identity are statements of strict identity and that BJ and SJ are the same person before the operation but not after. If sentence 7

7) BJ is the same person as SJ before the operation

is analyzed as

the referent of 'BJ' and the referent of 'SJ'
have all properties in common, past, present (i.e. before the operation), and future

and sentence 8

8) BJ is not the same person as SJ after the operation

is analyzed as

the referent of 'BJ' and the referent of 'SJ'
do not have all their properties in common, past, present (i.e. after the operation), and future,

then the two statements are contradictory, since their analyses are contradictory, the sum of an object's properties over time being the same regardless of which instant or period of time is taken as present; at least there is no indication that Perry thinks otherwise, that the sum total over time of an object's properties varies with time. In other
words, sentence 7 reduces simply to

\[ BJ = SJ \]

and sentence 8 to

\[ BJ \neq SJ. \]

But these are contradictory. If both these statements are to be true, therefore, it must be the case that some of the proper names in the statements, if not all, are ambiguous. And we will find that, in both of Perry's alternative languages, one of which he considers final, the reference of proper names does indeed shift from one time to another, so that both sentences 7 and 8 come out true. How this shifting occurs will be explained in the next chapter.

G. Chapter summary

The branch language fulfills all prerequisites for defending the theory of personal identity Perry supports: it entails the theory in question yet does not imply all three seemingly inconsistent sentences 1, 2, and 3; and it endows personal identity with transitivity, symmetry, and reflexivity, properties we would expect it to possess. Perry rejects the branch language because he believes that its concept of a person implies that Jones was actually two persons before the operation and that no one was named 'Jones' in the story, implications which are almost certainly false. Perry therefore devises a new language, one based on a different concept of a person.
Though the branch language, I contend, does not entail that Jones was actually two persons before the operation, it does imply that no one was named 'Jones', and hence it ought to be rejected. Moreover, its truth-conditions for personal identity statements lack a temporal perspective, a defect which results in its failing to describe the relationship holding between Jones, Smith-Jones, and Brown-Jones before the operation. However, none of these shortcomings, I maintain, decisively inculpates the branch concept of a person.
CHAPTER III

THE PERSON-STAGE LANGUAGE

A. The elements of the person-stage language

The person-stage language is Perry's first alternative to the branch language, one he eventually rejects in favor of the lifetime language. Like the other languages it derives its name from its concept of a person: in the person-stage language persons are assumed to be person-stages. Each person-stage constitutes a person.

That hypothesis seems very odd. Persons are usually thought to be continuant entities, things that last through time, and not possibly momentary objects like person-stages, entities that might exist no longer than an instant. How could the hypothesis that persons are person-stages be an improvement over the branch language's concept of a person, which at least can correspond to objects enduring through time? Perry abandoned the notion that persons are branches because it led, he believed, to the unacceptable conclusion that Jones, at any time before the operation, was really two persons, each of his stages then occurring being shared by the two branches alike. The person-stage language's con-
cept of a person certainly obviates that difficulty; each person-stage constituting an entire person, no person-stage is shared and so, according to Perry's theory of counting persons at a time, only one person exists at any instant prior to the operation. There is no risk, then, of Jones' being simultaneously two persons.

The next component of the person-stage language, the theory of naming, is more complicated than its branch language counterpart. Like the branch language, the person-stage language presupposes that each name is assigned by the picking out of a person-stage. But unlike the branch language, it supposes that the name names, not only the person—in this case the person-stage—that contains the person-stage, but every person-stage that has relation R to the stage picked out. In this language, then, proper names are ambiguous.

We mentioned earlier (in section II-F) that if the sentence 'SJ is the same person as BJ' is to be true before but false after the operation, and the relation of personal identity is to be analyzed in terms of strict identity, then at least one of the proper names 'Smith-Jones' and 'Brown-Jones' must be ambiguous. That required ambiguity is built into the person-stage language's theory of naming. But the ambiguity is systematic: at different times proper names name different persons. The device that guides the reference of proper
names in a sentence is that of temporal adverbs in initial position, phrases like 'before the operation', 'after the operation', placed at the beginning of a sentence. In that position temporal adverbs function as temporal markers which indicate, among other things, which person-stage or person-stages a name names. As before, adverbs like 'before the operation' are assumed to refer to a specific instant within a period of time and not to the entire period. When within the scope of such an adverb a name names only the person-stages which occur at the time indicated by the temporal adverb and have R to the stage picked out during the assigning of that name. When no initial temporal is present a name names just the person-stages which occur at the time of utterance of the sentence and have R to the stage picked out in the assigning of that name. And, finally, just in case there is exactly one such person-stage at a given time is the name proper at that time.

As an illustration consider the name 'Jones'. It is assigned by isolating stage j, which occurs before the operation. 'Jones', then, names at different times all the person-stages that have R to j, namely, all the person-stages

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*Or so Perry claims. It seems odd, though, to say that the person-stages are named at different times when in fact one can by means of suitable temporal adverbs name at any time person-stages that occur at any particular time. Why not just say that all the stages in question are named 'Jones' and let the referential apparatus of the sentence do the choosing?
that occur in the story. In the sentence

9) Jones will be in room 102 after the operation, if voiced at some time before the operation, the name 'Jones' names only the one stage which occurs at that time and has R to the stage j, and so the name 'Jones' is proper at that time. But in the sentence

10) After the operation, Jones is in room 102, uttered at any time, and the sentence

11) Jones is now in room 102, spoken after the operation, the name 'Jones' names the two stages that occur at that time after the operation and have R to stage j, and hence it is improper at that time, naming more than one person-stage at that time.

In one respect, then, the person-stage language's theory of naming is an improvement over its predecessor. Someone now bears the name 'Jones', at least some of the time, whereas in the branch language no one was ever named 'Jones'.

The last component of the person-stage language, its theory of truth-conditions, also pertains to temporal adverbs placed at the beginning of a sentence. In that position temporal adverbs play two roles. One has already been explained, to dictate which person-stages, if any, a proper name names and to fix its referent, if it has one. The second function of a temporal adverb in initial position is to signal at which time the sentence following the adverb is to
be understood as being true. If no adverb occurs at the beginning of the sentence the sentence is taken to be true at the time of its utterance.

The second role of temporal adverbs in initial position is made very plain in the person-stage language's truth-conditions, which Perry characterizes as follows (Perry, pp. 477-8):

A sentence of the form

N has F at t

uttered at time t', is true if and only if the person-stage named by N at t' has R to some person-stage that occurs at t and has F. A sentence of the form

N is identical to M

is true at t' if and only if the person-stage named by N at t' is identical with the person-stage named by M at t'. A sentence with an initial temporal adverb

At t', N has F at t

or

At t', N is identical to M

is true if and only if the sentence following the adverb is true when uttered at the time indicated by the adverb.

For example suppose that, after the operation, SJ is wheeled to room 102 and BJ is carted to room 104. Then, spoken at some time t' before the operation, the sentence

9) Jones will be in room 102 after the operation (i.e., Jones has the property of being in room 102 at some time t after the operation), is true, since there is at time t a person-stage which is in room 102 and has R to the person-stage named by 'Jones' at time t'. For the same reason the sentence

9') Jones will be in room 104 after the operation is true as well if voiced also at some time t' prior to the
operation. However, sentence 10 and its parallel

12) After the operation, Jones is in room 104

are both false regardless of the time they were stated, because the name 'Jones' is improper after the operation, two stages then being named by it.

The person-stage language's truth-conditions, at least in some respects, surpass their branch language counterpart. They allow us to ascribe to Jones properties we know him to have. The sentence

13) Jones entered hospital before the operation, which is false in the branch language because 'Jones' does not refer, is true in the person-stage language provided it is pronounced before the operation or placed within the scope of the temporal adverb 'before the operation'.

The person-stage language also enables us to describe the relationship between SJ, BJ, and Jones correctly. The temporal perspective absent from the branch language's truth-conditions for statements of personal identity is alive and thriving in the person-stage language. Sentences 1, 2, and 3, if spoken before the operation, and their initial adverb counterparts

1') Before the operation, SJ is the same person as J

2') Before the operation, BJ is the same person as J
3') Before the operation, SJ is not the same person as BJ. All have their expected truth-values: 1, 2, and 1' and 2' are true, since the stage named by 'Jones' before the operation is exactly the stage named by 'SJ' and 'BJ' at that time, and 3 and 3' are false because 'SJ' and 'BJ' name the same stage at that time. After the operation the situation is just the reverse. And again sentences 1, 2, and 3, if spoken after the operation, and their adverbial versions

1'') After the operation, SJ is the same person as J
2'') After the operation, BJ is the same person as J
3'') After the operation, BJ is not the same person as SJ

have their expected truth-values.

The person-stage language, then, at least at first blush, allows us to say what we want to say about Jones, SJ, and BJ. But the success of the person-stage language can only be partial; for should the language be a correct account of English, it would by the same token defeat Perry's purpose. How this clash arises is explained in the next section.

B. Concept of a person versus the theory of personal identity

As I mentioned at the beginning of this chapter,
Perry eventually rejects the person-stage language. In light of the goal he sets himself in his paper there is a pressing reason why the language should be discarded, a reason Perry himself seems unaware of. The concept of a person which is at the base of the language implies that the theory of personal identity Perry defends is false. Given the facts of our example, the hypothesis that person-stages are persons and the theory of personal identity in question are incompatible.

To prove that the two are inconsistent, the facts about our example being what they are, we assume that the language's hypothesis about what makes up a person is correct, and then we show that the theory of personal identity cannot also be true. Suppose, then, that every person-stage constitutes a person. The theory of personal identity Perry supports is:

for any person-stages x and y, x and y are R-related if and only if there is a person to which x and y belong.

Since the theory is expressed as a universally quantified biconditional, it can be divided into a conjunction of two separate statements,

A) if a person contains stages x and y, then x and y are R-related,
and

B) if \( x \) and \( y \) are \( R \)-related, then some person contains \( x \) and \( y \).

Statement A is true if a person is just a person-stage, because every person-stage is \( R \)-related to itself; that is, the \( R \) relation is reflexive. More specifically, since person-stages \( x \) and \( y \) need not be distinct, statement A applies to two kinds of cases: those where \( x \) and \( y \) are distinct, and those where they are the same. Cases of the first kind never arise under the present concept of a person, a person being just a single person-stage. Only cases of the second type occur, and therefore statement A reduces for this concept of a person to the statement that the person-stage forming a person is \( R \)-related to itself. That statement is true, since every person-stage is \( R \)-related to itself.

Statement B, however, is false if a person consists merely of a single person-stage. Our example abounds with distinct person-stages that are \( R \)-related, stages \( sj \) and \( j \), for example; yet no single person includes any such pair of stages, since each person contains exactly one person-stage. Insofar as there are distinct person-stages which are \( R \)-related, then, the person-stage language's concept of a person implies that statement B, and hence the entire theory of personal identity, is false. The \( R \) relation fails as a
sufficient condition of \( x \) and \( y \)'s both belonging to the same person.

Perry's ultimate aim in constructing the person-stage language, we must remember, is to vindicate the theory of personal identity mentioned above. Since that theory is false if the person-stage language is true, it particularly behooves him to prove that language unacceptable. His evaluation of the language is examined in the next section.

C. Perry's assessment of the person-stage language

As we mentioned above, Perry rejects the person-stage language. He summarizes his reasons as follows (Perry, p. 480):

He [the mentalist] cannot take refuge in the person-stage language, for it denies what clearly is true: that when I say of someone that he will do such and such, I mean that he will do it. The events in my future are events that will happen to me, and not merely events that will happen to someone else of the same name. The theory that English is the person-stage language violates our semantic intuitions; it gives an unduly complicated account of our language.

Perry's objections to the person-stage language focus on its theory of truth-conditions for sentences of the form '\( N \) has \( F \) at \( t \)'. Consider again the situation of Johnson, who is now in room 80 and will be in room 90 in, say, a half-hour. Spoken now, the sentence

\[ \text{Johnson will be in room 90 in a half-hour} \]

is true in the person-stage language if and only if there is
in a half-hour a person-stage which is in room 90 and has R to the stage presently named by 'Johnson'. So Johnson, the person now named by 'Johnson', who is now in room 80, will be in room 90 in a half-hour not just in case he himself is in that room in a half-hour, as we would expect, but just in case a totally different person, that is, some other person-stage, who has R to the present Johnson, is in that room in a half-hour. What will happen to the person now named 'Johnson', then, depends on what will happen to another person of the same name; that is what Perry objects to.

Perry is right, I believe, when he claims that the person-stage language violates our semantic intuitions. Events, we would say, to be part of a given person's future, must happen to that person; otherwise, they belong not to that person's future but to someone else's. But in light of how Perry dismisses an earlier transgression of our semantic intuitions it is not certain that the present violation is ground for rejecting the person-stage language. By having proper names at different times of their use refer to different entities the person-stage language already ignores our notion that a proper name, if it refers at all, refers to the same entity whatever the time of its use, at the risk of being improper if it does not. The proper name 'Johnson', for instance, would usually be understood to refer to the same entity regardless of the time of its use. Yet Perry
finds this first violation of our semantic intuitions no cause for abandoning the language; the fact that the ambiguity of proper names is systematic explains our intuitions. He writes (Perry, p.477):

... the name is systematically and coherently used, in such a way that we are easily misled into supposing that it names a single entity.

But then, if the fact that our use of an ambiguous name is orderly explains why we think the name refers to a single entity when it actually refers at different times to different entities, the same fact might also account for our belief that that entity must have events occur to it in order that they be events in its future, when in reality all that is needed is that events occur to a future entity having R to that first entity. Just as the method in our use of ambiguous proper names explains the one belief about them, so it would explain the other. Hence, the second violation of our semantic intuitions might be no more reason for rejecting the person-stage language than the first.

What the above considerations suggest is that our semantic intuitions might be misleading. And if the person-stage language does imply exactly what we would want to say about our example, as Perry indicates, then that is all the more evidence that our intuitions are plainly wrong. Fortunately for our intuitions the person-stage language is not adequate for describing our example or even for describing
ordinary cases, like Johnson's; its failure to incorporate our intuitions creates for it severe and crippling problems. The next section describes the nature of these difficulties.

D. The seamy side of the person-stage language

The difficulties inherent in the person-stage language surface in every one of its three components. Some of the difficulties might be just hurdles that an elaborate version of that language would have to clear. Others, however, constitute serious faults which, I contend, warrant rejection of the language as it stands.

A difficulty of the first kind arises in the person-stage language's theory of persons as a direct result of the hypothesis that each person-stage forms a person. As I have said already, that hypothesis is extremely counterintuitive. Persons are usually thought to be continuant entities, things that endure through time, and not more or less momentary objects like person-stages, which last but for an instant or not much longer. That hypothesis, however, solves one of the branch language's problems; it gives the correct count for the number of persons alive at a definite instant, at least according to the theory of counting persons at a time which Perry adheres to. But in solving that problem it creates another: how to count the number of persons existing not at a given instant of time but over a period of time. Suppose we con-
sider the person-stages of Jones, BJ, and SJ, that is, all the person-stages in our story, and also the period of time stretching from just before the birth of Jones to right after the deaths of SJ and BJ. How many persons lived during that time? To answer we need a theory of how to count persons over a stretch of time. Though the person-stage language offers no such theory, we can still experiment and apply what might be called the 'obvious' theory, that the number of persons existing over a certain span of time, given that a person is just a person-stage, is the number of person-stages occurring during the period. But clearly, that theory gives a wrong answer; a myriad of persons did not live during that span of time.

Of course the fact that the "obvious" theory of counting is inadequate is no reason to discard the hypothesis that each person-stage constitutes a person; but it does point out the difficulty to be surmounted. The branch language's hypothesis gives rise to no such problem, at least for the span of time specified above; the number of people involved in the story, again according to the "obvious" theory of counting persons over a period of time, is two, which, if anything, is a plausible answer.

A different problem, a serious one this time, crops up in the theory of naming. That theory is also very counterintuitive. Normally, proper names are not understood to
name different objects, depending on the time of their use, in the manner of definite descriptions. The particular way in which the person-stage language shifts the reference of proper names leads to dire consequences, which emerge most strikingly in that language's truth-conditions, or rather truth-values, for sentences of the form 'N has F at t'.

Here is an example. Suppose, as before, that SJ is transported to room 102 right after the operation. Then after SJ has died it is still true that he was in room 102 after the operation. That is, the sentence

14) SJ was in room 102 after the operation

does not become false because SJ has died. The event of his death would not alter or eradicate the fact that Jones was at that place at that time in his lifetime, just as even though Napoleon is long dead, it is still true now that he was visiting at Waterloo in 1815.

Yet the person-stage language implies that sentence 14 is false if spoken after SJ's death. Since no temporal adverb precedes the sentence, 'SJ' names only the person-stages that occur at the time the sentence is pronounced and have R to stage sj, the stage picked out at baptism. But of the stages that have R to stage sj, none occurs at the time of utterance, since, as we would say, SJ is dead at that time. The name 'SJ', then, fails to refer and sentence 14 is false. For the same reasons, any sentence of the form 'SJ has F at t'
spoken after SJ's death is false; still more generally, so are all sentences of the form 'N has F at t' voiced after N's death. Some of these sentences, though, we would say are true, sentence 14, for instance. Therefore the person-stage language is not the language we use to describe our example; it is not the English language.

The foregoing argument constitutes solid evidence, I believe, for discarding the person-stage language. The argument does not even depend on any special feature of Perry's example; the same point could be made using ordinary persons in ordinary situations. The sentence

Johnson was in room 90 at some point in his life, for instance, is false if it spoken after Johnson's death, for the same reason that 14 is false. Thus not only does the person-stage language fail to account for Perry's example; it fails to describe correctly ordinary situations.

Nevertheless we should not infer that the person-stage language's concept of a person is not ours because the language is not English. It may be possible to concoct a version of the language which would retain the same concept of a person but present a different theory of naming and different truth-conditions, together with a suitable theory of counting, a revised version which would meet the objections leveled against its parent. It is thus paramount that another
language be found that lacks the defects of the person-language and that supports the theory of personal identity Perry endorses. Such a language, Perry believes, is the lifetime language, his final attempt at constructing an adequate theory of how English operates. To that language we now turn.
CHAPTER IV

THE LIFETIME LANGUAGE

"Thus the suggestion that persons are lifetimes (or at any rate entities correlated one-to-one with lifetimes) proves satisfactory," concludes Perry near the end of his exposition of the lifetime language (Perry, p. 485). Accordingly, the last in Perry's trio of languages merits special attention; in it we should find the resolution of the problems besetting its predecessors. But whether or not the lifetime language overcomes the difficulties encountered by the branch and the person-stage languages, it is certainly as complicated as either, if not more so; hence it will be wise to approach it piece by piece, beginning with its theory of persons and ending with its theory of person counting.

A. The lifetime language's theory of persons

In the lifetime language a person is a lifetime. To every lifetime corresponds a person. Perry defines a lifetime as follows: a set of person-stages constitutes a lifetime if and only if there is in the set a person-stage having the relation R to all the members of the set and only to the members of the set.

In our story three lifetimes can be discerned. One is
the set consisting of all the person-stages in the story, what Perry calls the "Y-shaped structure," composed of the branches assigned to 'SJ' and 'BJ' by the branch language. That set is a lifetime because it contains an element—in fact, it contains many, since any stage j, occurring before the operation, can act as such an element—that has R to all the members of the set and to no other person-stage.

The other two lifetimes are formed by the two branches, respectively. The branch assigned to 'SJ' by the branch language is a lifetime, since all its elements have R to stage sj, a post-operative stage of SJ, and no other person-stage in the story has R to it. Likewise, the branch assigned to 'BJ' by the branch language also composes a lifetime. In general, any branch is a lifetime, but not vice-versa.

It appears contradictory for Perry to suppose that persons are lifetimes after he has rejected the branch language. He explains (Perry, p.481):

At first sight the suggestion that persons are lifetimes seems quite unpromising, leaving the mentalist worse off than the hypothesis that persons are branches. For the pre-operative stages of Jones belong to three lifetimes: the Y-shaped structure and each of its branches. If it was implausible to suppose that Jones was two persons all along, surely it is more implausible by at least a half to suppose that he was three.

Not only that; to Perry's explanation, we might add that the branch language at least made SJ and BJ one person each after the operation, supposing Perry's theory of counting to be
correct. The hypothesis that persons are lifetimes, on the other hand, seemingly implies that SJ and BJ each are two persons after the operation, since what we would call their stages belong to two lifetimes. Jones, then, would be three persons before the operation, and each of BJ and SJ would be two persons each after the operation. This situation is clearly unsatisfactory, and Perry rectifies it by introducing a principle which, in effect, excludes certain lifetimes when the theory of counting is applied. More about this principle in the section on the theory of person counting.

B. The lifetime language's theory of naming

The lifetime language's theory of naming revolves upon the notion of determinability of a lifetime by a person-stage. A given person-stage determines a certain lifetime if and only if the lifetime contains just these person-stages that have R to the given person-stage, that is, if and only if it contains all the person-stages that have R to the given person-stage, and only those person-stages.¹ Any

¹Here I have amended Perry's stated definition of determinability in order that it conform with the use he makes of it. On at least two occasions his definition omits the 'only if' clause included in mine. On p. 481 he writes, "But notice that each person-stage does identify a unique lifetime--the lifetime containing all person-stages that have R to it," and then, "Let us say that a person-stage determines the lifetime it identifies in the way just described--
stage j, then, which occurs before the operation, determines the Y-shaped lifetime, because that lifetime contains exactly those stages that have R to j; but such a stage j determines neither branch, since none contains all the stages having R to j. Likewise any stage sj (or bj), which occurs after the operation, determines the branch it belongs to but determines neither the other branch nor the Y-shaped lifetime, since they contain stages not R-related to stage sj (or bj).

Furthermore, since every person-stage exists at a very definite time, a lifetime can be said to be determinable at a certain time according as it is determined by some person-stage occurring at that time. In that sense the Y-shaped lifetime is determinable before the operation but not after, since any stage j determines it, but no stage sj or bj does. On the other hand the two branches are not determinable before the operation because no stage j determines them; but after the operation the two branches are determinable, since any stage sj will determine one and any stage

the lifetime containing all person-stages with R to it." But clearly the 'only if' clause is necessary if each person-stage is to identify a unique lifetime and if, as an example of the use Perry makes of the notion, "The Y-shaped lifetime . . . is not determinable after the operation" (p. 481). Otherwise stage sj, for instance, which occurs after the operation, determines both the branch containing it and the Y-shaped lifetime, since both these lifetimes contain the person-stages that have R to stage sj.
bj the other. In brief the Y-shaped lifetime is determinable only before the operation, the two branches only after the operation.

Now for the theory of naming proper. Like its predecessors the lifetime language presupposes that persons are assigned names by the picking out of a person-stage at baptism. Where u is the stage singled out for assigning name N, the primary referent of N is defined as the lifetime determined by u. Accordingly the primary referent of 'Jones' is the Y-shaped lifetime, that of 'SJ' the branch containing stage sj, and that of 'BJ' the branch containing stage bj.

As far as I can judge, primary referents play no role in the lifetime language. Their purpose in life is merely to be compared to secondary referents, which will be defined momentarily. It is not at all difficult to see why primary referents could hardly function within the lifetime language. If statements of the form 'N is the same person as M' are to be analyzed in terms of strict identity between the referents of the proper names 'N' and 'M', and Jones, SJ, and BJ are all the same person before the operation, the referents of their names must be identical before the operation. But the primary referents of 'Jones', 'BJ', and 'SJ' are all different before the operation; therefore the primary referents cannot be the referents of those names. And, indeed,
as we will see below, the referents of proper names in sen-
tences are their secondary referents.

At a given time $t$, the secondary referent of a proper
name $N$, assigned by isolating some stage $u$, is defined as
the lifetime determinable at $t$ which contains $u$—for short,
the lifetime identified at $t$ by $u$. If there is no such life-
time, $N$ has no secondary referent at $t$ and hence is improper
at that time.

Consequently the secondary referent of 'Jones' before
the operation is the Y-shaped lifetime, since it is the only
lifetime determinable before the operation and it includes
stage $j$. That is, 'Jones''s secondary referent before the
operation is just its primary referent. After the operation,
however, 'Jones' has no secondary referent, because there are
two lifetimes then determinable which contain stage $j$. In
like manner the secondary referent of 'BJ' and 'SJ' before
the operation is the Y-shaped lifetime, since it is the only
lifetime determinable before the operation and it contains
stages $sj$ and $bj$. Their secondary referent before the oper-
ation, then, is not their primary referent. The situation
is reversed after the operation; there, 'SJ' and 'BJ' regain
their primary referents.

In the lifetime language, then, proper names are sys-
tematically ambiguous, as in the person-stage language. At
different times of their use they refer to different enti-
ties. That ambiguity, I still maintain, is necessary if the sentences expressing the relationships among SJ, BJ, and Jones before and after the operation are to have their expected truth-value and if personal identity is to be analyzed in terms of strict identity between the referents of the proper names occurring in the sentences. Moreover, proper names, if they refer at all at a given time, refer only to lifetimes determinable at that time. This fact will be of paramount importance in the evaluation of the lifetime language.

C. The lifetime language's truth-conditions

The truth-conditions for sentences in the lifetime language display a refreshing simplicity reminiscent of the branch language. A sentence of the form

\[ N \text{ has } F \text{ at } t \]

spoken at time \( t' \) is true in the lifetime language just in case the secondary referent of \( N \) at \( t' \) contains a person-stage which occurs at \( t \) and has property \( F \). Otherwise, as when \( N \) has no secondary referent at \( t' \), the sentence is false. A sentence of the kind

\[ N \text{ is identical to } M \]

voiced at \( t' \) is true if and only if the secondary referent of 'N' at \( t' \) and the secondary referent of 'M' at \( t' \) are identical. If either name is improper at that time the sentence is false.
Temporal adverbs in initial position play the same role as in the person-stage language. They guide the reference of proper names occurring in the sentence, and they fix the time at which the sentence within the scope of the adverb is to be evaluated. Thus a sentence of type

At t', N has F at t

or of the kind

At t', N is identical to M

is true if and only if the sentence following the adverb is true if spoken at time t'.

We may note, first, that the truth-conditions make no mention of primary referents. Only secondary referents, which may vary from before the operation to after the operation, are used to evaluate a statement's truth-value. It is in this sense that primary referents play no role in the lifetime language.

More importantly, the lifetime language meets Perry's objection to the person-stage language. A person has a property F at time t just in case his lifetime, and not someone else's, has at t a person-stage with property F. In addition the lifetime language, like its forerunner, describes correctly the relationships holding among SJ, BJ, and Jones, both before and after the operation. To the sentences

1) SJ is the same person as J
2) BJ is the same person as J
3) SJ is not the same person as BJ
and their adverbial counterparts the lifetime language assigns the truth-values we expect them to have. Sentences 1 and 2 are true and 3: false if spoken before the operation, 'Jones', 'BJ', and 'SJ' all referring to the same entity, the Y-shaped lifetime. Voiced after the operation the sentences reverse truth-values, the proper names all then referring to different entities, or, in the case of 'Jones', not referring at all.

Furthermore, again as in the person-stage language, the name 'Jones' refers before the operation but not after. So the sentence

9) Jones will be in room 102 after the operation, for instance, and its parallel

9') Jones will be in room 104 after the operation are both true provided they are spoken before the operation, when 'Jones' refers to the Y-shaped lifetime. However, the adverbial counterparts of these sentences,

10) After the operation Jones is in room 102 and

12) After the operation Jones is in room 104, are both false, because 'Jones' fails to refer after the operation.

Bearing all the virtues yet lacking what he considered the unique vice of the person-stage language, the lifetime language appears to Perry "a satisfactory refuge for the mentalist." The one shortcoming Perry might acknowledge,
the ambiguity of proper names, he could easily account for by pointing out that the ambiguity arises only when division of persons takes place. In normal cases, that of Johnson's, say, where no branches overlap, the secondary referent of a proper name reduces to its primary referent and hence is the same whenever the secondary referent exists.

Nevertheless I believe Perry was too quick to accept the lifetime language as definitive. Whatever qualities it may possess, being a haven for the mentalist is not one of them. The lifetime language suffers from the same problem as its precursor: should it prove correct, the mentalist would be proven wrong. How this happens is explained in the next section.

D. The lifetime language and the mentalist

Perry's chief objective is to construct a language that will exonerate a theory of personal identity seemingly plagued by contradiction. His final attempt, the lifetime language, is internally consistent, as far as I can judge; no contradiction can be derived from it. Nonetheless it cannot serve to defend the theory of personal identity Perry supports, because the two are incompatible. If the lifetime language is correct and our concept of a person is that of a lifetime, then the theory of personal identity is false, the facts of our example being what they are.
The theory of personal identity in question can be stated as:

For any person-stages x and y, x and y are R-related if and only if there is a person to which x and y belong.

This universally quantified biconditional can be broken up into a conjunction of two distinct statements,

A) if a person contains stages x and y, then x and y are R-related

and

B) if x and y are R-related, then some person contains x and y.

It is statement A that clashes with the hypothesis that persons are lifetimes. For suppose that lifetimes are indeed persons. Then the Y-shaped structure, which is a lifetime, constitutes a person. That person contains stage sj, which is an arbitrarily chosen stage of Smith-Jones after the operation, and it also contains stage bj, an arbitrarily chosen of Brown-Jones from after the operation. Yet stages sj and bj are not R-related. Hence statement A is false, and so is the theory of personal identity, given that the Y-shaped structure is a person; it is not the case that any two stages of a person are R-related. If persons are lifetimes, the R-relation cannot be a necessary condition for person-stages x and y to be part of a single person.
The above argument affects only the capacity of the lifetime language to support Perry's theory of personal identity; it says nothing about whether the language is correct or not. Should the language be right, though, the theory of personal identity would be wrong. Fortunately for the mentalist the lifetime language fails to represent English in one important respect. Where it falls short is explained in the next section.

E. The shortcomings of the lifetime language

What, we may ask, is the secondary referent of 'SJ' after SJ has died? The secondary referent of a proper name at a given time is the lifetime determinable at that time which contains the stage singled out when the name was assigned. The secondary referent of 'SJ' after SJ's death, then, is the lifetime determinable after SJ's death which contains stage sj. But the only lifetime determinable after SJ's death, if BJ is still alive, is BJ's branch; and it does not include stage sj. Hence 'SJ' has no secondary referent after SJ's death (though, of course, it still has its primary referent).

The lack of a secondary referent for 'SJ' after SJ has died creates some problems for the lifetime language. We know, for instance, that SJ was in room 102 after the operation. Obviously, the fact that he was in room 102 at
that time still holds after his death. The event of SJ's death does not alter his history up to the time of his death. In other words the sentence

14) SJ was in room 102 after the operation

is true even after SJ's death. Yet the lifetime language deems that sentence false if it is spoken after SJ's death, since 'SJ' does not refer then. The lifetime language does not assign to sentence 14 the truth-value we expect it to have.

That discrepancy may be thought to be insignificant. After all, SJ is special. He, like BJ, is the product of personal division. Hence to express in the lifetime language what 14 means, we should use the adverbial counterpart of 14.

14') After the operation, SJ was in room 102.

That sentence is true, both in English and in the lifetime language, and so there is no problem.

But no, the problem remains, even though it is true that 14' has in the lifetime language the same truth-value as 14 in English. The failure of the lifetime language to give 14 its correct truth-value in no way depends on SJ's unusual status. The theory of naming causes an identical problem for ordinary cases as well. Taking another look at Johnson's situation, for instance, Johnson who indeed was in room 80 before being moved to room 90, we find that the sen-
Johnson was in room 80 before being moved to room 90 is false after Johnson's death because no lifetime determinable then (we may suppose that there are some) contains any of Johnson's stages, and hence his name fails to refer after his death. Moreover, nothing in the above argument turns on the properties chosen in the examples; we may say, in general, that

N has F at t is false after N's death whether or not N in fact has F at t. The lifetime language, therefore, fails to account correctly not only for how we wish to describe Perry's example but also for how we speak about ordinary instances, and hence ought to be rejected.

This result should please the mentalist. If the lifetime language is indeed incorrect, as I have claimed above, then his theory of personal identity stands a chance of survival, since it is not necessarily false if the language is.

Again, as for the branch and person-stages languages, it should be stressed that the fact that the lifetime language is incorrect does not necessarily mean that its concept of a person is at fault. Perhaps its theory of naming is wrong, or its truth-conditions, and not the concept that
persons are lifetimes.

One facet of the lifetime language remains to be explored, its theory of person counting. This we do in the next two sections.

F. The lifetime language's theory of person counting

Perry presents the lifetime language's theory of person counting by way of a sample question. He asks, "How many persons were there in Jones' room (room 100) before the operation?" (Perry, p. 484). His answer is quite compressed, considering the complexity of the theory it illustrates. Here is his response in its full short length (Perry, pp. 484-5):

On the one hand, "one" seems to be the correct answer; for there was only a single person, Jones, in the room. On the other hand, Smith-Jones and Brown-Jones were both there; so "two" seems like the correct answer. But, after all, three lifetimes (the Smith-Jones branch, the Brown-Jones branch, and the Y-shaped structure) contain the person-stage in room 100; so the answer would appear to be "three."

All three answers are correct—but they are answers to different, and distinguishable, questions. Consider open sentences of the form

\[ x \text{ has } F \text{ at } t \]

A person satisfies such an open sentence at a time. \( z \) satisfies the given open sentence at time \( t' \), if and only if \( z \) is identifiable at \( t' \) and contains a person-stage that occurs at \( t \) and has \( F \). The open sentence \( x \text{ is in room 100 before the operation} \)

is satisfied by exactly one person before the operation; so the answer to the question, "How many persons are in room 100?" asked before the operation (and to the question, "Before the operation, how many persons were in room 100?" asked at any time) is "one." After the operation, two distinct persons satisfy the open sentence;
so the answer to the question asked at that time (and to the question, "After the operation, how many persons were in room 100 before the operation?" asked at any time) is "two." There is no one time at which the correct answer to the question, "How many persons were in room 100 before the operation?" is "three." But the lifetime language will have to allow us to make assertions such as

At some time, Brown-Jones was in room 100 before the operation,

which will be true just in case there is some time \( t \) such that

\[
\text{At } t, \text{ Brown-Jones was in room 100 before the operation,}
\]

is true. The open sentence

\[
\text{At some time, } x \text{ was in room 100 before the operation,}
\]

will be satisfied by person \( z \) if and only if \( z \) is identifiable at some time and contains a person-stage occurring before the operation in room 100. This open sentence is satisfied by three persons, and so the answer to "At any time, how many persons were in room 100 before the operation?" is "three."

The first thing to note about the theory is that the answer it gives to Perry's initial question, "How many persons were there in room 100 before the operation?", varies with time. When the question is asked before the operation, its answer is 'one'. But if the question is asked after the operation, as Perry says, then the answer is 'two'. In other words, before the operation the number of persons in room 100 is one; but right after the operation the number of persons there were in room 100 before the operation changes to two. Correspondingly, the answer to the question 'Before the operation, how many persons were in room 100?' is 'one', whatever the time at which the question is posed; but the answer to 'After the operation, how many persons were in room
100 before the operation?*, regardless of when the question is asked, is 'two'.

This variation in the number of persons in room 100 before the operation is easily explained. Applied to the case at hand, the theory of counting implies that, at a given time, the number of persons there are or were in room 100 before the operation is just the number of lifetimes identifiable at the given time which have a stage in room 100 before the operation. Though Perry nowhere states what he means by a lifetime's being identifiable at a time, it is fair to suppose that its definition can be obtained from that of a lifetime's being identified at a time by a person-stage, in much the same way that Perry, by existentially quantifying over person-stages, derives from the notion of a lifetime's being determined at a time by a person-stage the notion of the determinability of a lifetime at a given time. On that supposition, then, and since a lifetime z is identified at time t by a person-stage u just in case the lifetime z is the unique lifetime determinable at t which contains u, we obtain that a lifetime z is identifiable at time t if and only if there exists a person-stage u such that z is the unique lifetime determinable at t which contains u, that is, if and only if for some person-stage u, z is determinable at t and contains u and is the only such lifetime.

Which lifetimes are identifiable when? From the
definition of identifiability we can conclude straightaway that a lifetime is identifiable at a certain time only if it is determinable at that time. Hence the Y-shaped structure is not identifiable after the operation and the two branches are not identifiable before the operation. However, before the operation, the Y-shaped structure is identifiable, since it is determinable at that time and there are stages which it is the only such lifetime to contain, namely, any stage in the story. Likewise the BJ branch is identifiable after the operation, there being stages, stage bj, for instance, which the branch is the only lifetime to contain while being determinable at that time. The same applies to the SJ branch. We find, then, that as far as our example goes, the lifetimes identifiable at a given time are just those lifetimes determinable at that time.

At a given time, therefore, the number of persons there were or are in room 100 before the operation is just the number of lifetimes determinable at the given time which have a stage in room 100 before the operation. All three lifetimes in our story have a person-stage in room 100 before the operation. However, only one of these is determinable before the operation; hence, before the operation the number of persons who are in room 100 is one. After the operation, two lifetimes are determinable; hence, after the operation, the number of persons there were in room 100 before the
operation is two. The fact, then, that a lifetime must be determinable at a given time in order to be counted explains why the count varies from before the operation to after.

In its full generality, for any (basic) property F, the theory of person counting is as follows. At any given time t' the number of persons there are or were with a property F at time t is just the number of persons identifiable at t' which have or had a person-stage at t with property F.

This theory of counting seems to have evolved in the following way. First Perry presupposes that

C) at time t', a lifetime z has property F at time t if and only if at t', the sentence 'x has F at t' is satisfied by z;

that is, at t' a lifetime z has property F at time t just in case, intuitively speaking, the sentence 'x has F at t' is true when x is the lifetime z. Though it is not explicit in Perry's exposition, that presupposition is nonetheless required for the reconstruction of the theory. For, from C, Perry reasons that the number of persons that, at t', had property F at time t is just the number of lifetimes identifiable at t' which contain a person-stage at t with property F. In other words, it follows from C, Perry would say, that to ask at t', 'How many persons were there with property F at time t?" is tantamount to asking, 'How many lifetimes satisfy, at t', the open sentence 'x has F at t'?"
Next, Perry defines 'satisfiability':

D) a lifetime \( z \) satisfies at time \( t' \) the open sentence '\( x \) has F at \( t' \)' if and only if \( z \) is identifiable at \( t' \) and contains a person-stage that occurs at \( t \) and has F.

Linking C and D gives

E) at time \( t' \), a lifetime \( z \) has property F at time \( t \) if and only if \( z \) is identifiable at \( t' \) and contains a person-stage that occurs at \( t \) and has F.

From E, using the same reasoning as for C, Perry concludes that the number, at \( t' \), of persons with property F at time \( t \) is just the number of lifetimes identifiable at \( t' \) which contain a person-stage at \( t \) with property F.

That theory of counting, I believe, is unsound. Why it is so is explained in the next section.

G. Criticism of the lifetime language theory of person counting

The flaw inherent in the lifetime language's theory of person counting is akin to that in its truth-conditions. Suppose that, after the deaths of SJ and BJ, we ask the same question Perry asked in his exposition of the theory of counting: 'How many persons were there in room 100 before the operation?' Its answer is just the number of lifetimes identifiable after SJ and BJ have died which have a person-
stage in room 100 before the operation. However, no lifetime is determinable after the deaths of BJ and SJ and hence none is identifiable. Consequently, after SJ and BJ have died, the number of persons there were in room 100 before the operation, according to the theory of counting, is zero.

Quite clearly, that answer is wrong. The fact that the answer to that question varies from 'one' before the operation to 'two' after the operation is odd enough in itself. If indeed there was only one person in room 100 prior to the operation, how could that number change after the operation? How could events which occur during or after the operation alter the count of persons in room 100 before the operation? Even the division of the person in room 100 should not affect that count, no more than would his death.

But if the variation in the count from one before the operation to two right after the operation is queer and objectionable, the further change to zero after the deaths of SJ and BJ is intolerable. (Here, to simplify the discussion, I assume that SJ and BJ die at the same time.) Imagine again the case of Johnson, a normal human being, who, say, was alone in room 80 prior to being moved to room 90. The number of persons in his room, then, just before his being moved, is one. After his death, this number does not change; forever after Johnson has died, most of us would agree, it is still the case that there was only one person
in his room just prior to his being moved to room 90. Yet the lifetime language theory of counting implies that after Johnson's death, no one was in his room prior to his being moved to another room, there being after his death no one identifiable with a person-stage in room 80 just before the move. The theory, then, fails to account even for ordinary cases of counting, let alone those involving the supposed division of a person, and so should be abandoned.

Perhaps much of the intuitive appeal of the theory of counting lies in the coincidence that there is a question for which the answers the theory gives to Perry's question are correct. If we ask soon after the operation, 'How many persons now alive were in room 100 before the operation?', the answer is indeed 'two'. Both SJ and BJ are alive right after the operation and both were in room 100 before the operation. Nevertheless the fact remains that there was only one person in room 100 before the operation, since SJ and BJ were one and the same at that time. If after SJ and BJ have died we ask again, 'How many persons now alive were in room 100 before the operation?', the answer is obviously 'none', neither SJ nor BJ being alive then. But again it remains true that there was only one person in room 100 before the operation.

There is yet a third question which the previous two must not be confused with, especially the first one. The
question is, 'How many persons have been in room 100 before the operation?' In order to distinguish it from the first question, 'How many persons were there in room 100 before the operation?', this third question might be paraphrased as, 'Of how many people is it true to say that they were in room 100 before the operation?' The answer, if the question is posed after the operation, is 'two', since both SJ and BJ were in room 100 before the operation and they are now (after the operation) distinct. It is in this sense, and only in this sense, that it is true to say that two people were in room 100 before the operation—that is, that, after the operation, even after the deaths of SJ and BJ, it is true of two people that they were in room 100 before the operation. This does not mean or imply, however, that there were two persons in room 100 before the operation.

The third question, 'How many persons have been in room 100 before the operation', must also be differentiated from the second question, 'How many persons now alive were in room 100 before the operation?' The difference manifests itself when the questions are asked after the deaths of SJ and BJ. The answer to the second question is obviously 'none', since both SJ and BJ have died, whereas the answer to the third is still 'two', since it is still true of two persons that they were in room 100 before the operation.

More will be said about these questions and their
answers in Chapter VI.

H. Chapter summary

The lifetime language is Perry's final attempt at constructing a theory that would exculpate the theory of personal identity he espouses. This last language shares many features with its predecessor. Its proper names are systematically ambiguous, referring at different times to different entities; temporal adverbs play the same role as in the person-stage language; statements of personal identity, as in the person-stage language, are analyzed in terms of strict identity between the referents of proper names occurring in the statement, making personal identity transitive, reflexive, and symmetric; and, in fact, the lifetime language assigns to all the sentences we have considered so far the same truth-value as does the person-stage language, describing correctly the relationship holding among Jones, BJ, and SJ before the operation and after.

Furthermore, the lifetime language, in an important respect, is a refinement over its predecessor. It meets the single objection which had led Perry to reject the person-stage language. A sentence of the kind 'N will have F at t' is true at t' just in case it is the referent of N at t' which has property F at time t, and not merely some other entity which is R-related to the referent, as in the person-stage language. And accordingly, Perry declares the life-
time language satisfactory.

But Perry's hope in the lifetime language is misplaced; for as well as possessing many of the advantages of the person-stage language, the lifetime language suffers from its two worst defects. First, the lifetime language, like the person-stage language, is inconsistent with the theory of personal identity Perry defends, given the facts about Perry's example. Hence if either of the two languages is correct, the theory of personal identity is incorrect. Second, as in the person-stage language, any sentence of the type 'N has F at t' is false after N ceases (or has yet) to exist, and therefore neither language can account for the truth-value of certain very ordinary statements about ordinary persons. Moreover, the theory of person counting associated with the lifetime language is itself unsound.

The lifetime language, then, neither defends Perry's theory of personal identity nor explains how a supposed case of personal division can be described consistently in the same terms as those used to make statements about ordinary persons. A language which accomplishes both these aims has yet to be found.

This chapter ends the discussion of Perry's solution to the problem. In the next chapter David Lewis' contribution will be reviewed.
CHAPTER V

DAVID LEWIS AND

THE FISSION OF PERSONS

In all the languages he developed in order to protect a certain theory of personal identity, Perry adhered to the view that personal identity statements are to be analyzed in terms of strict identity between persons. Thus sentences of the form

N is the same person as M,

spoken at some time t, are true just in case the referent of N and that of M are strictly identical at time t, the referents of N and M being a lifetime, a person-stage, or a branch, depending on what the specific language assumes a person to consist of. Yet, the theory of personal identity the languages are meant to defend states, not under what conditions persons are the same, but under what conditions person-stages belong to a single person; moreover, the theory is couched not in terms of the strict identity of person-stages but in terms of a weaker relation, the R-relation, holding between person-stages. There is, then, a discrepancy in character between the languages' truth-conditions for personal identity statements, on the one hand, and the theory of personal
identity the languages were created to defend, on the other. Since all three languages, by way of their concept of a person, are meant to contain the theory of personal identity, they can be seen as attempts on Perry's part to show there is no conflict between the theory of personal identity he endorses and the view that statements of personal identity are to be analyzed in terms of strict identity between persons.

In "Survival and Identity" David Lewis pursues very nearly the same goal: to bring together the theory of personal identity in question and the view that personal identity is a matter of strict identity between persons. I say "very nearly" the same goal, because Lewis' and Perry's approaches differ in minor though noteworthy respects. First, what Perry and I, following him, have called the "theory of personal identity" appears under a different guise in Lewis, as the thesis that the R-relation is the I-relation. This relation Lewis defines as "the relation that holds among the stages of a single continuant" (Lewis, p. 21). In logical notation the definition can be stated as

\[(x)(y)(Ixy \equiv_{df} \exists z(Pz \& x \in z \& y \in z))\]

where, as before, 'x' and 'y' range over person-stages, 'z' ranges over sets of person-stages, and 'P' is the predicate 'is a person'. Using the usual criterion for the individuation of relations, that of coextensiveness in all possible
cases, we can express as
\[(x)(y)(Rxy \Leftrightarrow Ixy)\]
the thesis that the I-relation is just the R-relation, which, as we can see from the definition of the I-relation, is equivalent to
\[(x)(y)(Rxy \Leftrightarrow \exists z (Pz \& xez \& yez)).\]
But the above quantified biconditional is merely a statement of Perry's theory of personal identity (cf. pp. 13-14 above). To say that the I-relation is the R-relation, therefore, is just to assert that the theory of personal identity Perry espouses is true.

Second, Lewis, like Perry, is committed to the view that strict identity is a correct analysis of personal identity. But unlike Perry, he provides no theory of naming or truth-conditions for statements of certain kinds, but only a theory of what a person consists of and also a theory of counting. In the following sections, what these theories are and how they apply to the division of persons will be explained.

A. Lewis' concept of a person

Lewis advances the following hypothesis (Lewis, p.22):

\[\ldots\text{ something is a continuant person if and only if it is a maximal R-interrelated aggregate of person-stages.}\]
That is, if and only if it is an aggregate of person-stages, each of which is R-related to all the rest (and to itself), and it is a proper part of no other such aggregate.
Since a branch is nothing but a maximal R-interrelated set of person-stages, Lewis' definition of a person is the same, or almost the same, as the one Perry had proposed in the branch language. The difference between the two lies in the fact that Lewis' definition is more general than Perry's. Whereas Perry stipulates, at least initially, that a person is a set of person-stages, Lewis leaves it open what kind of aggregate a person consists of (see Lewis, p. 39, n. 4). In order to make the two definitions the same, I will take Lewis' persons to consist also of sets of person-stages.

We can say, then, that, for Lewis, persons are branches. Accordingly the person-stages in Perry's story form two branches, which Lewis designates 'C1' and 'C2'. These two branches correspond to Perry's SJ and BJ branches. Which of C1 and C2 corresponds to SJ and which to BJ is arbitrary, since Lewis gives us no means of distinguishing between the two branches.

Is the branch hypothesis of a person adequate? The branch language is the first language Perry developed, and it is also the first one he rejected. He discarded it for two related reasons: the branch hypothesis implied, in his judgment, that Jones, the person undergoing the operation, was two persons before the operation, when, obviously, he was only one person; and the branch language entailed that no one in the story was named 'Jones', when, again, someone
was. Lewis has rejoinders to both these objections, in the form of a theory of counting. That theory is explained in the next section.

B. Lewis' theory of person counting

When Perry concluded that the branch hypothesis of a person implied that two persons existed before the operation, he reasoned as follows. Even though only one stage exists at any one instant before the operation, any such stage belongs equally to two branches; hence two persons are alive at any time before the operation. In other words, Perry used the following theory of counting; given that a person is a branch, the number of persons existing at a time equals the number of branches with a stage at that time. That theory of counting, in conjunction with the branch hypothesis, led to a count of persons before the operation which clashes with what we might call the "accepted" count of one.

Lewis agrees; the count of the number of persons alive before the operation is one. He writes (Lewis, p.26):

The count of stages is the count we accept; yet we think we are counting persons, and we think of persons as continuants rather than stages. How, then, can we tolerate overlap?

For instance, we say that in a case of fission one person becomes two. By describing fission as initial stage sharing we provide for the two, but not for the one. There are two all along. It is all very well to say from an eternal or postfission standpoint that two persons (with a common initial segment) are involved, but we also demand to say that on the day before the fission only one person entered the duplication center;
that his mother did not bear twins; that until he fissions he should only have one vote; and so on. Counting at a time, we insist on counting a person who will fission as one. We insist on a method of counting persons that agrees with the result of counting stages, though we do not think that counting persons just is counting (simultaneous) stages.

The dilemma Lewis poses is an intriguing one. We want to count the number of persons existing at a given time, having assumed that persons are branches. If, persons being branches, we add up the number of branches with a stage at the given time, as Perry does, we obtain what we regard to be a wrong answer. On the other hand, if we count the number of stages at the time, we get the right count, though it appears we have not counted what we intended to count in the first place, namely, persons.

Lewis' solution to this dilemma is to deny that we must count by identity, that is, that we must count as one person alive at time t any continuant which has a stage at time t and is not identical to any other such continuant. Instead we might count by a weaker relation which Lewis dubs "tensed identity" and defines as follows:

continuants C3 and C4 are identical-at-time-t if and only if C3 and C4 both have stages at time t and all and only stages of C3 at t are stages of C4 at t.

To put the definition more simply, continuants C3 and C4 are identical-at-time-t just in case they completely over-
lap during that time. Despite its name suggesting the contrary, tensed identity is not the relation of identity, since it may hold between continuants which are not identical.

Lewis proposes that continuants be counted not by identity but by identity-at-a-time. On that proposal, all continuants sharing the same stages at time \( t \) count as one person alive at time \( t \). It is easy to see that that theory of counting gives the right count. The number of persons alive after the operation is two, since two continuants have stages at that time, and they do not share stages then. Before the operation, however, the number of persons alive is one, because the two branches that have stages occurring before the operation share their stages then and hence count only as one. Lewis' theory of person counting, then, removes one of the objections that led Perry to reject the branch hypothesis. Next we examine the second of those objections.

C. Naming in Lewis'

discussion of fission

The second reason why Perry abandons the branch language is that it implies that no one in the story is named 'Jones', since the stage singled out in assigning the name belongs to more than one branch. Once again, then, it is the overlapping of the two branches which causes problems, as it did in attempts to count the number of persons alive before the operation.
How does Lewis handle this second difficulty? Though, as we mentioned earlier in the chapter, Lewis offers no theory of naming, as Perry had in each of his three languages, the few remarks he makes on the matter suggest he finds no serious problem with the name 'Jones'. Both branches in the story would bear the name, and hence 'Jones' would be ambiguous anytime it is used. But at least someone in the story would be named 'Jones': before the operation, only one person exists in the story (this we know from the theory of counting), and he is named 'Jones'; after the operation two persons are alive, and both bear the name. As solution to Perry's naming problem, then, Lewis could invoke the fact that before the operation, only one person exists, and therefore that that person can be baptized, even though the stage that would be singled out in baptism belongs to two continuants. That is, Lewis could say that, in order to name a person, it is not requisite that the stage isolated belong to only one branch; what is necessary is that the stage isolated belong to only one person existing at that time, the time the ceremony is performed. And that this condition is met in Perry's story is insured by Lewis' theory of counting, which implies that only one person exists before the operation.

This relaxed view, however, of what is necessary for baptism to function leaves us with the ambiguity of 'Jones',
there being over the period of time the story takes place
two persons bearing that name. This ambiguity, Lewis be-
lieves, would be harmless in sentences that hark back to
prior to the operation, since such sentences would be true
on both disambiguations of 'Jones', or false on both. Sen-
tences that refer to after the operation, though, like pre-
dictions made before the operation, would be problematic; no
doubt Lewis would deem such a sentence false (or perhaps
just without truth-value), be it true on either disambigua-
tion of the name or false on either.

In connection with the topic of naming it is worth
remarking that Lewis uses 'C1' and 'C2' not only to desig-
nate what in our discussion of Perry was called the SJ and
the BJ branches but also to name the two persons correspon-
ding to the two branches. For instance, he says, "How many
persons entered the duplication centre yesterday? We may
reply: C1 entered and C2 entered . . . " (Lewis, p. 27).
'C1' and 'C2', then, also serve as proper names, no less
than 'Smith-Jones' and 'Brown-Jones' in Perry. This fact is
hardly surprising, of course; I point it out only because I
will use 'C1' and 'C2' as names in a later section.

D. An evaluation of Lewis' theory of counting

As far as I can judge, Lewis' theory of counting is
adequate. Unlike the theory Perry presented in relation to
the lifetime language, Lewis' theory has no difficulty clearing the first hurdle, namely, to account for normal cases, those in which no continuants overlap. But then, neither has its rival, the counting-by-identity theory, according to which the number of persons alive at a time equals the number of continuants with a stage or with stages at that time. It too gives the accepted count for normal cases. Such cases, therefore, do not constitute a basis for choosing between the two theories, since they support each theory equally.

The second hurdle consists of fission cases, and Lewis' theory seems to be the sole competitor to progress beyond it. It alone implies that there is only one person alive before the operation and two after; the counting-by-identity theory entails that there were two persons all along, contrary to our intuitions. Fission cases, then, provide evidence in favor of Lewis' theory but against the counting-by-identity theory.

But adequate as it may be, Lewis' theory of person counting nonetheless harbours an oddity which must be exposed. In the passage quoted earlier (p. 76-77 above), Lewis stresses how the method of counting we are seeking must agree with the result of counting person-stages, while at the same time be a method of counting persons, since we
believe we are counting persons, not person-stages. The theory he proposes appears at first blush to meet this requirement. To count the persons alive at a certain time we count the continuants having stages at that time, but with the proviso that continuants which overlap during that time are counted as one person instead of two. Persons being continuants, it certainly looks as though we are counting persons. The very phrase 'counting continuants by tensed identity' suggests we are indeed counting continuants, though in some strange but legitimate manner.

It may well be that, in some weak sense of the word 'counting', we are counting continuants when we count them by tensed identity. Strictly speaking, however, we are not: we are counting groups or classes of continuants. To put the point technically, we are counting equivalence classes formed by the relation of tensed identity holding among continuants. Relations of tensed identity, as Lewis himself points out (Lewis, p. 28), are equivalence relations, being reflexive, transitive, and symmetric. Such a relation has the property of dividing into distinct groups, called 'equivalence classes', the objects among which it holds. In the case of a relation of tensed identity each equivalence class contains just those continuants that are identical-at-that-time. The relation of being identical-before-the-operation, for instance, groups into equivalence classes all those con-
tinuants that are identical-before-the-operation. Each group of continuants which overlap before the operation forms a single equivalence class. In Perry's story C1 and C2 are identical-before-the-operation, and no other continuant bears that relation to them; hence they form an equivalence class under that relation, in effect the only equivalence class, since there are no other continuants in the story. On the other hand, under the relation of being identical-after-the-operation, C1 and C2 each forms an equivalence class on their own, since the relation fails to hold between them.

The decision to count as one person continuants that are identical-at-a-time, when counting the number of persons alive at that time, is tantamount to counting the equivalence classes formed by that relation, because each equivalence class contains just those continuants that are identical-at-that-time. It follows, therefore, that to count continuants according to tensed identity is not to count continuants. Rather it is to count equivalence classes formed by that relation.

The point can be expressed succinctly as follows: when one counts two (or more) continuants as one person, one is not counting continuants any more; one is counting groups of continuants, even though the groups themselves consist of continuants, perhaps even single continuants, and the rela-
tion that generates the groups is a relation holding among continuants.

Since, according to Lewis' concept of a person, a group of continuants does not constitute a person, at least not when it contains two or more continuants, it is still a fair question to ask how it is that a count of groups of continuants could possibly give us an accurate count of the number of persons existing at a time. Until that question is answered, Lewis' method of counting persons is as ad hoc as that of counting stages. Lewis, then, as far as I can see, has not resolved the dilemma he himself set.

E. A criticism of Lewis' analysis of personal identity

As I mentioned in the introduction to this chapter, Lewis wishes to analyze personal identity in terms of strict identity. One answer to the question of what matters in survival, he asserts, is "a compelling commonsense answer, an unhelpful platitude that cannot credibly be denied: what matters is identity between myself, existing now, and myself, still existing in the future" (Lewis, p. 18). This answer holds not only for questions of survival; it applies as well to questions of personal identity, even the problem cases: "At the same time we can consistently agree with common sense (and I think we should) that what matters in questions of personal identity--even in the problem cases-- is
identity" (Lewis, p. 19).

Furthermore, by 'identity' Lewis means strict identity, as he stresses in the following passage: "But this verbal manoeuvre [calling the R-relation 'identity'] would not meet the need on those who think, as I do, that what matters in survival is literally identity: that relation that everything bears to itself and to no other thing" (Lewis, p. 20). And in matters of personal identity the relation of identity must hold among continuants, not among person-stages: "He who says that what matters in survival is identity, on the other hand, must be speaking of identity among temporally extended continuant persons with stages at various times" (Lewis, p. 20). "Likewise for other questions of personal identity," he adds later on (Lewis, p. 21). No mistake is to me made, then: Lewis analyzes questions of personal identity in terms of the strict identity of continuants.

Whether C1 and C2 are the same person before the operation is such a question, and hence, according to Lewis, C1 and C2 are the same person before the operation just in case C1 and C2 are strictly identical then. Clearly they are not strictly identical, either before the operation or at any other time. Therefore C1 and C2 are not the same person before the operation.

This consequence of Lewis' analysis of personal
identity is contrary to our intuitions about Perry's story. It seems that, before the operation, C1 and C2 are the same person. Perry, for one, would reject this analysis right then and there, as he did the branch language, because it fails to imply that C1 and C2 are the same person before the operation. His final language, the lifetime language, did imply that C1 and C2 (actually, Smith-Jones and Brown-Jones) were the same person before the operation, and he considers that language satisfactory.

But furthermore, the result that C1 and C2 are not the same person before the operation creates a severe tension, if not an inconsistency, between Lewis' analysis of personal identity and his method of counting. That method, we have already seen, implies that only one person existed before the operation, but two after. C1 and C2 being the only two persons alive during that entire timespan, that is, alive both before the operation and after, it must be they who are one before the operation and two after. Very reasonably, then, we can suppose that the theory of counting also entails that C1 and C2 are one person before the operation and two after the operation. Here I am assuming that to say that C1 and C2 are one person before the operation is to say just that: that, before the operation, C1 and C2 count as a single person.

Thus we arrive at the following awkward situation.
Lewis' method of counting implies that C1 and C2 are one person before the operation; yet his analysis of personal identity entails that C1 and C2 are not the same person before the operation. Before the operation, then, C1 and C2 are one person but not the same person.

This statement is not a literal contradiction. Nonetheless it sounds extremely odd. But though the source of that statement's oddity is hard to pinpoint, it is not at all difficult to see how Lewis placed minself in this predicament. The relation he proposes to count persons by and the relation he uses to determine personal identity are not the same relation. Two (or more) persons count as one at a certain time just in case they are identical-at-that-time, whereas two (or more) persons are the same person at that time just in case they are identical. Since continuants that are identical are also identical-at-all-times, it never happens, for example, that C1 and C2 are the same person at some time but not one person at that time. However, the reverse does not hold. Continuants that are identical-at-some-time may not be identical, that is, identical-at-all-times; and hence it may happen, as in the case of C1 and C2 before the operation, that persons that are one at some time are not the same person at that time.

This conflict between Lewis' method of person counting and his analysis of personal identity, if indeed it is
a conflict, can be resolved in either of two ways: by altering the theory of counting, or by changing the analysis of personal identity. The method of counting, as I have maintained earlier, needs no adjustment, insofar as it implies exactly what we wish to say about the number of persons in Perry's story. Therefore the analysis of personal identity must be to blame for any conflict. That analysis, I conclude, is unsatisfactory on two counts: it clashes with our intuition that C1 and C2 are the same before the operation; and it is at odds with Lewis' theory of counting, a theory which is satisfactory to the extent that it predicts just what we would expect.

F. Chapter summary

In his discussion of the division of persons David Lewis pursues the same goal as Perry: to reconcile the view that person-stages belong to a single person just in case they are R-related and the view that persons are the same just in case they are identical. Like Perry, then, Lewis believes that personal identity is a matter of the strict identity of persons. To effect the reconciliation, he assumes, as Perry had in the branch language, that persons are branches. The first problem Perry encountered, the apparent crowding in Jones' room before the operation, Lewis overcomes by proposing to count persons according to
tensed identity rather than according to identity. On that proposal only one person exists before the operation. Hence the population problem is solved. The second problem Perry faced, the failure of Jones to be baptized 'Jones', can also be surmounted by appealing to the theory of counting, provided the conditions necessary for baptism to function are relaxed. If, instead of requiring that the stage singled out during baptism belong to only one continuum, we demand that only one person be baptized, that is, that, at the time the ceremony takes place, only one person exist which is being baptized, and that it include the stage singled out, then someone in the story will indeed be named 'Jones'. In fact, there will be one such person before the operation, but two after, with the consequence that 'Jones' will be ambiguous.

Those solutions to Perry's branch language problems are, I believe, satisfactory. Lewis' analysis of personal identity in terms of strict identity, however, is not acceptable, because it conflicts with our belief that C1 and C2 are the same person before the operation and is at variance with Lewis' own method of person counting. As was the case for all of Perry's languages, though, the fact that the strict identity analysis of personal identity is incorrect does not mean that the concept of a person to which the analysis is applied is itself at fault. The analysis itself may be defective.
Perry's and Lewis' attempts at describing coherently the supposed instance of personal division taking place in Perry's story are not entirely successful. Though every semantic theory they present captures some of the story's features, no one theory by itself implies everything we would like to say about that example. A theory that improves substantially upon Perry's and Lewis' efforts can be developed, I believe, and the present chapter is devoted to describing such a theory.

In order to distinguish it from its two ancestors, Perry's branch language and Lewis' own theory, the present language will be called the "B language," where 'B' is meant to suggest 'branch'. The following sections describe its various elements, starting as usual with the language's concept of a person.

A. Persons in the B language

The B language concept of a person is the same as the one in the branch language or in Lewis' theory: persons
are branches. As before, then, the person-stages in Perry's story form two branches, with the stages occurring before the operation belonging to both branches alike.

As we proved in Chapter II, the hypothesis that persons are branches logically implies the theory of personal identity that Perry defends, namely, that person-stages \( x \) and \( y \) are \( R \)-related just in case some person contains both \( x \) and \( y \). Or, to put it in Lewis' terms, the hypothesis that persons are branches entails without further ado that the \( I \)-relation is the \( R \)-relation. No need, therefore, to examine various difficult cases of personhood; if persons are branches, the \( I \)-relation holds just when the \( R \)-relation does.

B. The B language's theory of person counting

The basic method of person counting in the B language is as follows. The number of persons there are during a certain period of time is equal to the number of branches formed by the person-stages occurring only during the period. According to the present theory, then, it is not necessary to consider all the person-stages occurring in, say, Perry's story, in order to determine the number of persons there are during a given time period. Rather, only those person-stages which occur during the given time internal need be taken into account.
For example, suppose we ask how many persons there are after the operation. Since the only stages that occur then are the post-operative stages of SJ and of BJ, we find, considering these stages in isolation from the rest, that they form two branches, that is, two maximal R-interrelated sets; one consists of all of BJ's post-operative stages, and the other of all of SJ's post-operative stages. The number of persons there are after the operation, then, is two.

Before the operation, however, only one person exists, since the stages that occur then, which are the pre-operative stages of Jones, by themselves form a single branch. Likewise, the number of persons existing over the entire period of time the story takes place is two, since all the person-stages occurring in the story form two branches.

This basic method of person counting applies to instants as well as to intervals of time. The person population at a given instant is just the number of branches formed by the person-stages occurring only at that instant. So, for instance, the number of persons alive at an instant shortly after the operation is two, since each of the two person-stages occurring then is R-related to itself but not R-related to the other stage and hence forms a maximal R-interrelated set by itself. On the other hand the number of
of persons there are at an instant soon before the operation is one, since only one stage exists at any such instant, and it forms a branch on its own, being R-related to itself. In general, then, for either a given interval of time or instant of time, the number of persons there are at that time is equal to the number of branches formed by the stages occurring only during or at that time.

In the case of a period of time, it should be added, the phrase 'the number of persons there are during a given time period' is open to another interpretation. It could mean the number of persons alive at every instant of that period, in contrast to existing at some instant or other during the period. When the phrase is so construed, a condition must be attached to our present theory, stipulating that the branches formed by the stages occurring only during the period in question have a stage at every instant of the period. The number of people there are during a given period of time, therefore, where this is interpreted to mean the number of persons existing during the entire period, is just the number of branches which are formed by the stages occurring only during that period and which have stages at every instant of that period. The distinction made here between persons that exist at some instant or other during a given time period and persons existing during the entire period is not peculiar to the B language's
theory of counting, the same distinction must be made for any theory.

The B language's theory of counting appears to be successful. It accords with what we regard to be the accepted count of persons at various times during Perry's story. Moreover, it displays an elegance absent in Lewis' theory. Persons are branches, and to count persons, according to the present theory, we simply count branches. Yet, despite its success and elegance, the theory is suspect. We do not seem to be counting the right kind of branches. When we assumed persons to be branches, we tacitly assumed that the branches which compose persons are the largest such branches possible; that is, that the time span considered is long enough to include all the possible stages a person might have. And hence it does not seem right to be counting branches that occur within a limited time span. Those limited branches, we might say, are not persons; they are merely parts of persons. Still, whether or not the method of counting is philosophically satisfying, its success at giving the right count begs for explanation. This problem will occupy us in a later section. For now, we turn to the theory of naming.

C. The B language's theory of naming

Like Perry's three languages the B language's theory
of naming presupposes that a name can be assigned to a person by the picking out of a stage during some baptism ceremony. Let \( u \) be the stage singled out; then, provided the stage \( u \) belongs to exactly one person at the time of baptism, the name \( N \) names, not just the branch, but every branch of which \( u \) is a stage. If \( u \) fails to belong to a single person at the time of baptism, then baptism does not take place; the name \( 'N' \) names no one. Whether \( u \) does belong to exactly one person or not is decided by the language's method of person counting.

Applying the theory of naming to Perry's story, we obtain the following results. First we should note that, according to the theory of person counting, the person-stages \( j, bj, \) and \( sj \), which are the stages isolated in assigning the names 'Jones', 'BJ', and 'SJ', respectively, each belong to only one person at the time the names are assigned, since each such stage by itself forms a branch at that time. So there is no possibility of the naming procedure's failing. Then, we find that the branch with a person-stage in room 102 after the operation is called 'SJ' and that that with a person-stage in room 104 after the operation is named 'BJ', as in the branch language. But furthermore, each branch is also called 'Jones', in contrast to the branch language, where neither branch bears that name.
In the B language, therefore, someone in the story is named 'Jones'. In fact, over the time span the story unfolds, there are two such persons. Before the operation, only one person exists, and he bears the name 'Jones', as well as 'BJ' and 'SJ'; after the operation, two persons exist, of whom one is named 'BJ', the other 'SJ', and both of whom are called 'Jones'.

D. The B language's truth-conditions for statements of the form 'N has F at t'

Before tackling the B language's truth-conditions for sentences of the kind 'N has F at t', it will be instructive to re-examine those of the branch language and ask whether they could not be transferred without alteration to the B language. Doing so will help to explain why the B language's truth-conditions must differ from those of the branch language.

Where N is a proper personal name, F a basic property, and t a time, a sentence of type 'N has F at t' is true in the branch language just in case the branch referred to by N contains a person-stage at t with F. If the branch contains no such person-stage or if the name N fails to refer, the sentence is false. Under those truth-conditions sentences containing the names 'SJ' and 'BJ' will have the truth-values we expect. For instance the sentences
15) SJ is in room 100 before the operation
16) BJ is in room 100 before the operation

are true, as are

17) SJ is in room 102 after the operation
18) BJ is in room 104 after the operation

but sentences

19) SJ is in room 104 after the operation
20) BJ is in room 102 after the operation

are false, again as we would expect.

However, any sentence containing the name 'Jones' is false under those truth-conditions, because two branches bear the name and hence the name fails to refer. So, whereas in the branch language 'Jones' fails to refer because no branch bears the name, here 'Jones' would fail to refer because more than one branch bears the name. In either case the result is the same: sentences in which 'Jones' occurs are false.

This result is problematic. The fact is that we do use the name 'Jones' in sentences, and these sentences are not always false. Perry, for one, uses the name when he relates the story: it is Jones who enters hospital, it is Jones whose brain is triplicated, it is Jones whose heart is failing, etc. So it seems that in at least some instances the name 'Jones' is not ambiguous and does refer, and hence the truth-conditions of the branch language need
to be modified.

But in what way should they be changed? It is quite clear that the name is not ambiguous when it occurs in present-tense sentences spoken before the operation, as in, say, 'Jones is now in room 100'. At that time Jones is, obviously, one person. On the other hand, though it may not be as clear, it is also true, I believe, that in most contexts the name is ambiguous when it occurs in present-tense sentences voiced after operation. Thus 'Jones is presently in room 102' is ambiguous after the operation, I hold, because Jones has divided by then, and, as the theory of naming and the theory of counting support, there are in existence after the operation two persons named 'Jones'. The same applies to the sentence 'Jones will be in room 102 after the operation', say; even though it may be uttered before the operation, when only one Jones exists, the sentence is nevertheless false (or without truth-value), since Jones will have divided by the time mentioned in the sentence.

These observations, if such they are, can be incorporated within the B language by modifying the branch language's truth-conditions as follows:

a sentence of the form 'N has F at t' is true just in case all the branches of name N are identical-at-time-t and have a person-stage with F at t.
Otherwise the sentence is false. In case only one branch bears a given name N, the condition that all the branches of name N be identical-at-time-t is automatically satisfied, since every branch is identical-at-any-time with itself. This condition insures that a name like 'Jones', which names more than one branch, will refer just in case all the branches form a single person at the time referred to by the sentence containing such a name. It does not insure that the name will refer when only one person named 'Jones' exists at the time referred to by the sentence, even though it may be the case that only one person named 'Jones' exists when that name does refer. Imagine, for example, that BJ outlives SJ by a substantial number of years. Then only one person would be named 'Jones' after SJ had died. Nevertheless a sentence like 'Jones is now in room 110', spoken long after has died, would be deemed false by the B language even if BJ were indeed in room 110 at the given time.

Here are a few illustrations. Our perennial example, 'Jones is in room 100 before the operation', is true, since the two branches named 'Jones' overlap before the operation and have at that time a stage in room 100. The same goes for 'Jones entered hospital before the operation'. However, 'Jones is in room 102 after the operation' is false, since the two branches of name 'Jones' do not overlap at that time; similarly for 'Jones will be in room 102 after
the operation'. The B language's truth-conditions, then, seem to work properly.

E. The B language's truth-conditions for statements of the form 'N is the same person as M at time t'.

The analysis of personal identity statements presented in this section differs from that of Perry and Lewis. Rather than being analyzed in terms of strict identity, statements of personal identity in the B language are analyzed in terms of identity-at-a-time, that is, in terms of tensed identity. Persons are the same at a given time (either an instant or an internal) just in case they are identical-at-that-time, that is, just in case their branches completely overlap whenever they occur during the given time. Thus BJ and SJ are the same person before the operation, since their branches overlap at any time they have stages before the operation. For just the opposite reason, SJ and BJ are not the same person after the operation, nor during their entire lifetime.

Likewise Jones, before he undergoes the operation, is the same person as BJ and as SJ, since what we would call his person-stages at that time are just those of BJ and SJ before the operation. After the operation, however, two Jones exist, and hence any reference to Jones is ambiguous.
The truth-conditions which entail the results described above are the following. A statement of the kind

\[ N \text{ is the same person as } M \text{ at time } t \]

is true just in case all branches of name \( N \) and all branches of name \( M \) are identical-at-time-\( t \). In other words, the statement is true just in case the stages which occur during time \( t \) and belong to a given branch bearing either name \( M \) or name \( N \) are identical to the stages which occur during time \( t \) and belong to any other such branch. Otherwise, the sentence is false.

The reason why the truth-conditions demand that all branches bearing name \( N \) and all branches bearing name \( M \) be identical-at-time-\( t \), rather than merely the branch named \( N \) and the branch named \( M \), is to accommodate sentences containing a name like 'Jones', which names more than one branch. As in the truth-conditions for sentences of the kind '\( N \) has \( P \) at \( t \)', we want 'Jones' to refer just in case the sentence containing it refers to a time when the two branches with that name form a single person. Requiring that the two branches bearing that name be identical-at-the-time insures that the name will refer only when all these branches form a single person. This claim will be justified in a later section.

Under the B language's truth-conditions, the sentences
1') Before the operation, SJ is the same person as J
2') Before the operation, BJ is the same person as J
3**) Before the operation, SJ is the same person as BJ

are all true, as we would like them to be. On the other hand, the sentences

1'') After the operation, SJ is the same person as J
2'') After the operation, BJ is the same person as J
3'**') After the operation, SJ is the same person as BJ

are all false. Sentences 1'' and 2'' are false because 'Jones' fails to refer after the operation, the two branches bearing that name not being identical-after-the-operation; and 3'' is false because the SJ branch and the BJ branch are not identical-after-the-operation. The B language, then, correctly describes the relationships among SJ, BJ, and Jones.

Furthermore, proper names in the B language are not ambiguous in the undesirable way they were in the lifetime language. In that language, the sentence 'SJ is now the same person as BJ' is true before the operation and false
after, because 'SJ' and 'BJ' change referents with the course of time. Before the operation they both refer to the Y-shaped lifetime; after the operation they refer to their respective branches. This shift is extremely counterintuitive, I believe. In the B language, that same sentence, 'SJ is now the same person as BJ', is both true before the operation and false after the operation without the referent of 'SJ', or that of 'BJ', shifting from one time to the other. The names keep the same referents whenever they occur. And, in general in the B language, a name that has a referent keeps that referent for all times, as we would expect. In a way this holds even for 'Jones', for, to put the point paradoxically, it has no referent even when it does refer. That is, even in the cases where we would say that 'Jones' does indeed refer, say, for example, in the sentence 'Jones is in room 100 before the operation', where 'Jones' refers to the one person existing before the operation, the B language assigns no referent to the name; it merely provides truth-conditions that allow a sentence containing the name to be given a truth-value. The lack of a referent for 'Jones' when the name occurs in a true sentence is not eminently satisfactory, of course; but supplying 'Jones' with a referent—the set of stages occurring before the operation is a prime candidate—would substantially complicate the B language. In any event, the fact remains
that unproblematic comes like 'BJ' and 'SJ' retain the same referent whenever they are used, while the sentences containing them are assigned the truth-values we expect them to have. This is more than can be said about the lifetime language, not to mention its various other shortcomings. The B language, then, though not ideal, is a vast improvement over the lifetime language. As for Lewis' theory, no comparison can be made between it and the B language in this respect, since Lewis offers no formal theory concerning names.

We might also note that temporal adverbs do not play in the B language the dual rôle they fulfilled in the lifetime language. They serve only one function: to indicate at which time the subject or subjects have a given property. Hence their position in the sentence is quite irrelevant. Sentences 1' to 3*'' could just as well have been written with the temporal adverbs at the end of the sentence, rather than at the beginning.

F. Tensed identity and its relation to strict identity

The B language has now been presented in full. Still, much needs to be said about the theory. We have seen in the previous section, for instance, that tensed identity is the better relation for analyzing statements of personal identity. But why should that relation work?
What interpretation of it will account for its success?

The idea behind analyzing personal identity statements in terms of tensed identity is in reality quite straightforward. When we ask whether SJ and BJ are the same person before the operation, for example, we are asking by the same token whether SJ and BJ, at that time in their life, are the same person. Consequently, in order to answer that question and establish whether, at that time, SJ and BJ are the same person, we need only examine them at that point in their lifetime, that is, examine their person-stages at that time, and see if the person-stages are identical. No need, therefore, for all of SJ's stages and all of BJ's stages to be identical, which is what the strict identity analysis of personal identity requires, in order for SJ and BJ to be the same person before the operation.

An analogy might help to clarify the point. No one would insist that all of SJ's stages be in room 100 in order for it to be true that SJ is in room 100 before the operation. It need only be the case that SJ be there at the time in question—that is, that his person-stage at that time be in room 100. Similarly, in order for SJ to be the same person as BJ at a given time, it is not necessary for all of SJ's stages to be identical to all of BJ's, as the identity analysis requires. It need only be the case that his person-stages at that time be identical to those of BJ.
at that time, that is, that SJ and BJ be identical-at-that-time. And this is just what the tensed identity analysis demands.

Yet, despite its requirement that only some of a person's stages be compared, the tensed identity analysis attributes to personal identity the same important logical characteristics that a strict identity analysis would: tensed identity, like strict identity, is an equivalence relation, and hence the relation of personal identity, under either analysis, is transitive, symmetric, and reflexive.

For the remainder of this section the implications of the two analyses will be compared for a variety of situations. We will find that they do not always conflict. In fact, more often than not, the two analyses give the same results. In normal situations, for instance, when no branches overlap, the two analyses agree: if a sentence of the kind 'N is the same person as M at time t' is true according to one analysis, it is true according to the other. For, if no branches overlap, no stages are shared among branches, and hence any stage u singled out for assigning a given name belongs to only one branch. The names N and M, therefore, name a single branch if they name at all. Now, the sentence 'N and M are the same person at time t' is true according to one analysis just in case N and M are identical-at-time-t; according to the other, the sentence
is true just in case N and M are strictly identical. But since there is no overlap among branches, branches are identical-at-a-given-time only if they are strictly identical; and moreover, branches which are identical are identical-at-any-time. Consequently, N and M are identical-at-a-given-time just in case they are identical, and the sentence 'N and M are the same person at t' is true according to the tensed identity analysis when and only when it is true according to the strict identity analysis. Normal cases, then, are always instances of the two analyses' agreeing.

Normal cases are not the only situations in which the two analyses accord. The problem cases also provide instances of agreement, though they do not always do so, obviously: for if they did, there would be no practical difference between the two theories.

Suppose, for example, that long after their demise, we ask, 'Were SJ and BJ the same person?' The correct answer would be 'No, they were not', I believe. Some things are true of the one person which are not true of the other, SJ was in room 102 after the operation, for instance, while BJ was not. So SJ and BJ were not the same person. This reasoning suggests that a correct analysis of the sentence 'SJ is the same person as BJ' should be one in terms of strict identity, that SJ and BJ are the same person just in
case they are strictly identical. That analysis is ade-
quate, I believe, since it implies the answer we obtained
above. But it is adequate only if the 'is' in the senten-
ce 'SJ is the same person as BJ' is interpreted as a tense-
less 'is'. A strict identity analysis of statements of
personal identity would not be adequate---this is one of the
central contentions of this thesis—if the sentence is taken
to mean 'SJ and BJ are now the same person'.

Sentence 3*, however,

3*) SJ is the same person as BJ,
could be analyzed in terms of tensed identity just as well.
To say tenselessly that SJ is the same person as BJ is to
say that they are the same person at any time; and hence,
according to the B language, 3* is true just in case SJ and
BJ are identical-at-all-times. More generally, taking into
account the possibility of names like 'Jones' occurring, we
can say that a sentence of the form

N is (tenselessly) the same person as M

is true just in case all branches bearing name N and all
branches bearing name M are identical-at-all-times. Applying
this analysis to the SJ and BJ example, we again obtain
that SJ and BJ are not the same person, as we obtained with
the strict identity analysis.

Why the two analyses should work equally well is
not difficult to see. Both imply that the statement 'BJ is
(tenselessly) the same person as SJ' is true just in case the stages of BJ are identical to all those of SJ, or, more generally, all the stages of branch N are just those of branch M. Such statements, then, are instances where the tensed identity analysis reduces to the strict identity analysis. So for such statements, the two analyses will always agree, not only in problem cases, like the example above, but in normal cases as well.

Thus far, we have seen that the two analyses always agree for sentences of the type 'N is (tenselessly) the same person as M', whether the statements are made about problem cases or not, and that the two analyses also always agree for sentences of the kind 'N is the same person as M at a given time t' when the statements are made about normal cases. Therefore the only cases left to consider, which must be the ones for which the two analyses may differ, are problem cases about which statements of the kind 'N is the same person as M at a given time t' are made. The great majority of the statements we have made about Perry's story are of this kind.

About these cases we can say only what holds of all cases in general, namely, that a statement which is true under the strict identity analysis will also be true under the tensed identity analysis. If 'N and M are the same person at time t' is true under the strict identity analysis,
then \( N \) and \( M \) refer to only one branch each, and \( N \) and \( M \) are identical. Clearly, \( N \) and \( M \) are thus identical-at-any-time and hence the sentence is true under the tensed identity analysis as well.

However, if \( N \) and \( M \) are identical-at-some-time-t and the case we are dealing with is a problem case, it need not be true that all branches named '\( N \)' and all branches named '\( M \)' are identical. Hence if '\( N \) is the same person as \( M \) at a given time t' is true under the tensed identity analysis, it may not be true under the strict identity analysis.

The two analyses, therefore, will differ only as regards statements of the kind '\( N \) is the same person as \( M \) at a given time t' made about problem cases; and when they do differ in such cases, the statements are deemed true by the tensed identity analysis but false by the strict identity analysis. In the case of Perry's story, for instance, the statement that could not be accounted for by the identity analysis was '\( SJ \) is the same person as \( BJ \) before the operation'. It considered that statement false, while the tensed identity analysis deems it true.

From this exhaustive comparison of the two analyses, an important conclusion can be drawn. Since the two analyses are in complete agreement over all cases except the problem ones about which statements of the form '\( N \) and \( M \) are the same person at a given time' are made, it follows
that only these cases can serve to separate the two analyses if, as appears to be the case, both can adequately account for the cases in which they do agree. Normal cases, then, those in which no overlap occurs among branches, do not enable us to choose one analysis over the other.

G. **Personal identity and person counting in the B language**

Lewis' analysis of personal identity and his method of counting, it will be remembered from Chapter V, are not always in harmony. In certain situations a severe tension develops between the two. A case in point is the example of SJ and BJ before the operation. On the one hand the method of counting implies that SJ and BJ are one person before the operation, their branches being identical-at-that-time. On the other hand, the analysis of personal identity entails that SJ and BJ are not the same person before the operation, since their branches are not identical. Taken together, then, Lewis' analysis of personal identity and his method of person counting imply that SJ and BJ are one but not the same person before the operation. This dislocation, I wish to say, is unnatural and unintuitive. It seems that once a definition is given of what a person is, that is, once a certain concept of a person is taken for granted, persons that are one should be the same, and vice-versa.
In the B language no such dislocation arises. Persons that are one at a given time are also the same at that time, provided the following definition is accepted of what it is for two persons to count as one. Two persons count as one at a given time in the B language just in case one person has stages during the given time whenever the other does, and these stages form a branch within that period of time. Given this definition, it can be shown that persons are the same at a given time when they are one at that time; at least, I can find no counterexample. The B language, then, is free from yet another problem that plagued Lewis' treatment of Perry's story. Its analysis of personal identity and its theory of counting are in perfect accord.

H. The B language's theory of person counting compared to Lewis' method

In all the situations we have examined so far, Lewis' method of person counting and the B language's theory have produced identical results. For both normal cases and Perry's story the two theories imply what we regard to be the correct count. Nonetheless these two ways of counting persons are not equivalent. Their count sometimes disagree, as the next example will illustrate.

Imagine a case of simple overlap, where two branches exist at different times except for the part they
share. This kind of situation might well result from our man Johnson, a normal patient, age 30, now in room 80 but about to be moved to room 90, receiving a blow on the head, a blow severe enough to eradicate all memories he has of the first 25 years of his life. Up until time b, then, the time of the incident, all of Johnson's stages are R-interrelated, just as they would be if Johnson were not to receive a blow. But since he does get hit and the stages occurring after time b are not R-related to his early stages, the stages occurring up until time b form a maximal R-interrelated set, namely, a branch.

Furthermore, the stages occurring after the incident are R-related among themselves. But they are also R-related to all the stages occurring after time a, when Johnson is 25 years old. Hence all the stages occurring after time a form a second branch. In all, therefore, Johnson's stages (if we may call him 'Johnson' even after he suffers the blow) form two branches, which overlap between time a and time b.

Now, it may not be obvious just what we would say about Johnson after he receives a blow as severe as the one described, whether he is the same person, for instance, and whether he is still Johnson. But it is quite clear, I believe, that, at least until he is injured by the blow, Johnson is a single person, since he is, until that time,
exactly like any other normal person, and hence should count as only one person.

Yet, not both of the theories under comparison give that result. The B language's theory of counting implies that only one person exists before time b, the time of the incident, since all the stages occurring before then form a single branch. Lewis' method, however, entails that there are two persons in existence before time b, because two continuants, that is, two branches, have stages at that time, and those stages are not identical; in other words, the two branches are not identical-before-time-b. Evidently, therefore, the B language's theory of person counting and Lewis' method are not equivalent.

Also obviously, the case of simple overlap can serve as a counterexample to Lewis' method of person counting, since our intuitions about the case do not agree with the count given by the method. We would say that Johnson is a single person before the receives the blow, whereas the method implies that two persons existed before the incident occurred.

In a way we can explain why Lewis' method fails. It allows events which happen after a given period of time to influence the count of persons there are during the period, when it should not. The fact that Johnson's character and memory are affected by the blow he receives should be irre-
levant to how many persons there are before the incident. That much is clear. But what is not clear is whether the failure is due to what might be called the counting method proper, the idea that continuants ought be to counted according to the relation of tensed identity, or whether the method's failure is due to what continuants are assumed to be, namely, branches. In other words, the failure of Lewis' method in the present instance might be attributable to the branch concept of persons itself rather than to Lewis' way of counting these branches.

The fact that the B language's theory of counting implies the correct count would be helpful if it were obvious that that theory is also based on the branch concept of a person. We could then maintain that it must be Lewis' method of counting per se which is at fault, since there would then be other ways of counting, based on the same concept of a person, which would give the right count. Alas, it is not at all certain, at least to my mind, that the B language's theory of counting is indeed based on exactly the same concept of a person as is Lewis' method. This is yet another problem that must be settled.

At least our example illustrates one nice feature of the B language's theory of person counting: The only stages that need to be considered are those that occur during the time for which we wish to know the population. This proce-
dure is very much in line with how we normally count persons. That is, we do so without inquiring about people's pasts and futures. All we take note of are the persons as they are at the time the count is being taken.

Finally, we should ask, does the B language's theory of person counting resolve Lewis' dilemma? The dilemma, it will remembered, was the following. To count the person population at a time, we can either count the number of person-stages at the time, or we can count the number of branches there are with a stage at that time. These, it seems, are the only two plausible choices. If we count the person-stages there are at the time in question, we get the correct count; however, it appears that, by doing so, we have not counted what we set out to count, namely, persons, since we have not counted branches. On the other hand, if we count the branches with a stage at the time in question, we are seemingly counting what we intend to count, namely, persons; the problem here is that the count so obtained is wrong.

Lewis' solution to the dilemma is to count branches by tensed identity. That method gives the accepted count, at least for Perry's story; that is, it gives the count that would be obtained by counting stages. However, Lewis' solution is not really a solution, I believe; for to count continuants by tensed identity cannot correctly be said to
be a way of counting continuants. Rather it is a method for counting groups of continuants.

The B language also gives a count that matches the count of stages at the time. But does it count persons? It does count branches, but not the same kind of branches as those Lewis envisaged. The branches counted by the B language are what we termed 'limited' branches, branches that can be formed within a limited period of time, whereas the branches Lewis had in mind are the largest possible branches, that is, branches formed from all possible person-stages. In fact, it is quite likely that, to the B language's proposal that persons be counted at a time by counting the (limited) branches during that time, Lewis would object that one is merely counting parts of persons, and not entire persons. He almost says just that when developing his definition of a person, in the following passage (Lewis, p. 22):

A continuant person is an aggregate of person-stages, each one I-related to all the rest (and to itself). For short: a person is an I-interrelated aggregate. Moreover, a person is not part of any larger I-interrelated aggregate; for if we left out any stages that were I-related to one another and to all the stages we included, then what we would have would not be a whole continuant person but only part of one.

The argument Lewis gives in this passage is phrased in terms of the I-relation; but Lewis would make similar assertions in terms of the R-relation, since he believes that the
I-relation is nothing but the R-relation.

To Lewis' objection I have no solid reply. The fact that the B language's theory of counting is successful, perhaps even more so than Lewis' own theory if we take into account the case of simple overlap, is too striking to be a mere coincidence. But since I have no explanation for the theory's success, Lewis' dilemma still stands.

I. Extending the B language's theory of person counting

The basic method of person counting presented in section B can be generalized to answer queries like Question 1, 'How many persons were there in room 100 before the operation?', which Perry used to present his own theory of counting. That is, from counting the number of persons there are at a given instant the method can be extended to count only those persons with a certain basic property F. For example, given that the number of persons there were before the operation is just the number of branches that can be formed by the person-stages occurring only at that instant, the number of persons there were at that time who were also in room 100 is just the number of those branches that have a person-stage in room 100. Clearly, then, the answer to the question is 'one', since the only branch that can be formed at that instant also has a person-stage in room 100. Here it is assumed that the adverb 'before the
operation' refers to a specific instant, as Perry had in his own exposition.

Answers in terms of the theory of counting can also be given to Questions 2 and 3, which we claimed must be kept apart from Question 1. Question 2, 'How many persons now alive were in room 100 before the operation?', can be answered by extending the basic method of counting as follows. A person who is alive now and who was in room 100 before the operation clearly must be alive during (though not necessarily throughout) the period between now and before the operation. Hence it is fair to suppose that the number of persons now alive who were in room 100 before the operation is equal to the number of persons there are during that interval who have a person-stage in room 100 before the operation and also a stage now. In terms of the method of counting extended to intervals of time, this number is just the number of branches that can be formed from person-stages occurring only during the interval and that have a stage now and one in room 100 before the operation.

Now, suppose the question is asked before the operation but after the instant designated as the one when Jones is in room 100. Its answer, according to the theory above, is 'one', since only one branch can be formed from the person-stages occurring during that interval and it has a stage in room 100 before the operation and one at the time
the question is asked. On the other hand, if the question is asked after the operation but before the death of SJ and BJ, its answer is 'two', again according to the theory. However, if the question is posed after SJ and BJ have died, its answer is 'zero', since neither of the two branches existing in the interval has a stage occurring after SJ's and BJ's death. The answers the theory provides, then, match what we believe to be the correct answer.

It is very interesting, though, that the same theory breaks down when the temporal perspective is reversed and a question like question 2 is asked before the operation about a time after the operation. Imagine, for instance, that BJ and SJ are brought to room 105 after the operation in order to be interviewed, and that before the operation, we ask, 'How many persons now alive will be in room 105 after the operation?' The answer, according to the theory we just used, is 'two', since two branches can be formed by all the person-stages occurring between the time the question is asked and the time SJ and BJ are brought to room 105, and each branch has a stage at the time the question is asked and a stage in room 105 at the time of the interview. But 'two' cannot be the right answer, because there is only one person alive before the operation. Nor is 'one' the correct answer, I think; it cannot properly be said, I believe, that Jones will be in room 105 after the
operation. The point remains, though, that the theory of person counting as modified to answer Question 2 cannot be applied to questions such as the one introduced above.

Question 3, 'How many persons have been to room 100 before the operation? ', which might be paraphrased as, 'Of how many persons is it true to say that they were in room 100 before the operation?' can also be accommodated within the framework of the method of counting. Question 3 is the same as Question 2, except that the requirement that the persons be alive now, i.e. alive at the time the question is asked, is removed. Accordingly, its answer in terms of the method of counting is just the number of branches that are formed by person-stages occurring only between the time the question is asked and the time designated as being before the operation, and that have a person-stage in room 100 at the time designated. Before the operation the answer to the question is 'one'; after the operation the answer is 'two', even after the death of SJ and BJ. So once again, the theory of counting accords with what we consider to be the facts about the example.

J. Chapter summary and conclusion

The B language is a descendant of Perry's branch language and Lewis' own theory, in that it too is founded on the branch concept of a person. Therefore, like its two
ancestors, the B language implies the theory of personal identity Perry and Lewis endorse, which, in Lewis' parlance, is the thesis that the I-relation is the R-relation.

The branch concept of a person, however, is the only element the B language shares with its two predecessors. The rest of its elements depart in some way or other from the corresponding elements in the branch language or in Lewis' theory, and more often than not, improve upon them.

The B language's theory of counting, for instance, differs radically from its only plausible alternative, Lewis' method. And even though, surprisingly enough, this radical difference does not give rise to different counts, at least as far as Perry's story and normal cases are concerned, the B language can nevertheless boast of using only those stages which occur at or during the time for which the population is being counted, a procedure which mirrors the one actually followed when, say, we count the number of persons in a room. Moreover, the B language's theory of person counting seems to work for cases of simple overlap, where Lewis' method fails.

The next theory in the B language, the theory of naming, is also an improvement over its parent theory, the branch language's theory of naming (Lewis presents no such theory). The B language's theory implies that both SJ and BJ are named 'Jones' and hence that someone before the
operation is called by that name, whereas the branch lan-
guage entails that no one existing either before or after
the operation bears that name, contrary to our intuitions.
Lewis, for his part, offers no formal theory of naming;
but, as we mentioned in Chapter V, evidence suggests he
would agree fully with the B language's theory.

The B language's truth-conditions for sentences of
the kind 'N has F at t' are nothing more than a refinement
of the branch language's truth-conditions. The revision
allows a sentence containing the name 'Jones' to be true
when the sentence refers to a time when the two Jones are a
single person, which is any time before the operation.
Though this is not reflected in the truth-conditions,
'Jones' in effect refers to SJ and BJ's common segment. As
a result the B language assigns to Jones, BJ, and SJ exact-
ly the properties we would say they do have.

The truth-conditions for statements of the form
'N and M are the same person at time t', on the other hand,
are more than a mere elaboration of either Lewis' views or
of the branch language's truth-conditions for such state-
ments. They embody the view that statements of personal
identity are to be analyzed in terms of tensed identity,
rather than in terms of strict identity. The analysis in
terms of tensed identity is the only one which is accep-
table; for, as we explained at length in section F, the
two analyses give different results only for sentences such as 'SJ and BJ are the same person before the operation', and, for such sentences, only the analysis in terms of tensed identity gives the truth-value we would expect. The B language's truth-conditions for statements of personal identity, then, are a vast improvement over its predecessor; they alone imply exactly what we wish to say about the relationships holding among Jones, SJ, and BJ, before the operation and after.

But though the B language is thoroughly satisfactory as far as implying what we believe to be true about Perry's story and normal cases, it does not fare much better than Lewis' theory as far as satisfying our philosophical intuitions. The incongruous element in both theories is the theory of counting. In Lewis the method of counting is ad hoc because it does not seem to direct us to count what we assume persons to be, namely, branches. The B language's theory of counting, on the other hand, displays the formal elegance absent in Lewis, in that the B language does indeed count branches to count persons. Nevertheless, the theory is just as ad hoc as Lewis', since the branches counted by the B language do not appear to be the branches that are assumed to be persons.

The B language, then, is not ideal. Some of its elements could be upgraded, not in order to produce
different implications—the present ones, as far as I can judge, are those we want—but in order to secure the philosophical underpinning of the theory. Still, the fact remains, I believe, that the B language is an undeniable improvement over its predecessors, and hence, I hope, a step to a yet better theory.
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