

A version of this paper appears in *Philosophical Studies* 66 (1992), pp. 1-26.

ON LANGUAGE AND THE PASSAGE OF TIME

Ned Markosian

I. Introduction

Since the early part of this century there has been a considerable amount of discussion of the question 'Does time pass?'. A useful way of approaching the debate over the passage of time is to consider the following thesis:

The space-time thesis (SPT): Time is similar to the dimensions of space in at least this one respect: there is no set of properties such that (i) these properties are possessed by time, (ii) these properties are not possessed by any dimension of space, and (iii) in virtue of time's possession of these properties it is true to say that time passes.

Those who say that time does not pass generally want to affirm something like SPT. But those, on the other hand, who say that time does pass generally want to deny SPT.

Of course, SPT is, as it stands, a mere skeleton of a thesis. It needs to be fleshed out. What could the relevant properties be? Why exactly would it be that in virtue of time's possession of these properties it is true to say that time passes? What exactly would it mean to say that time passes? These are all matters that require considerable discussion.

The aim of this paper, however, is to take up some linguistic issues that have been considered central to the debate over the passage of time. There are two main reasons why I think it is appropriate to discuss these linguistic issues independently of the relevant metaphysical issues. The first reason is historical: many of the writers who have taken up the issue of whether or not time passes

have begun their discussions by focusing on linguistic matters. This is true both of such non-passage theorists as Goodman, Quine, Smart and Mellor, and of such passage theorists as Prior, Gale, Schlesinger and Smith.¹ The general idea that each of these people has entertained, some of them with more conviction than others, is that the metaphysical issues involved in the question of whether or not time passes – including, especially, questions that stem from a consideration of SPT – can all be settled simply by settling the relevant linguistic issues. Consequently, these writers have turned, in some cases almost immediately, from discussions of those metaphysical issues to discussions of linguistic matters.

The second reason I think it is appropriate to discuss the relevant linguistic issues independently of the metaphysical issues in question is philosophical. It turns out, not surprisingly, that all of the linguistically-minded debaters mentioned above were onto something. It does *appear*, at least, that a settling of the appropriate linguistic issues could settle, once and for all, the metaphysical debate over the passage of time.² Let me explain.

At the center of the linguistic issues involved here is the undisputed fact that in our ordinary language (which is to say, for our purposes, in English), time is accorded a special status that no other dimension of the world enjoys. We have numerous tense distinctions in English – the past tense, the present tense, the future tense, the past perfect, and so on – but we do not have spatial distinctions along these lines built into our language.

Prima facie, at least, this seems to be a datum that may be used in an argument against SPT. For it may be claimed by the passage theorist that our language is necessarily this way; it could not have been otherwise, and still have provided us with the means for accurately describing all of the objective features of the world that we are in fact able to describe. If our language had been otherwise, the claim may go, if, that is, time had been treated just like

¹ See in this regard Goodman, *The Structure of Appearance*, Chapter XI; Quine, *Word and Object*, pp. 170ff.; Smart, “The River of Time;” Mellor, *Real Time*; Prior, *Time and Modality, Past, Present and Future*, and *Papers on Time and Tense*; Gale, *The Language of Time*; Schlesinger, *Aspects of Time* and “How Time Flies;” and Smith, “Problems with the New Tenseless Theory of Time,” and “Sentences About Time.”

² I will argue in Section V below that this appearance is misleading, precisely because the relevant linguistic issues cannot be decided without first deciding the relevant metaphysical issues.

space in our ordinary language, then we would not be able to capture in our descriptions of the world all of the objective features of the world that we are in fact able to capture. This can be explained only by the fact that important features of our language correspond to important features of the world; i.e., by the fact that language mirrors reality. Hence, the argument would go, it follows from time's essentially special status in our language that time also has an essentially special status in reality: time passes.

This somewhat plausible argument may be formulated as follows.

The Linguistic Argument Against SPT

- (1) Time's special treatment in our ordinary language is necessary; time could not be treated in ordinary language in just the way space is, without our thereby losing some of our ability to describe accurately objective features of the world.
- (2) If (1), then SPT is false.

-
- (3) SPT is false.

But, of course, just what inferences we ought to draw from our main linguistic datum – the fact of time's special treatment in our ordinary language – is a controversial matter. Non-passage theorists have drawn their own conclusions. While they have admitted that time *does* get special treatment in ordinary language, they claim that things need not be this way. They try to show that we *could* have a language in which time is treated as on a par with space; a language, that is, with no tense distinctions and no tensed verbs. And they argue that the fact that we could do this shows that there is, in reality, no objective difference between time and space in virtue of which it is true to say that time, unlike space, passes.

Here, then, is another rather plausible argument; this one may be formulated as follows.

The Linguistic Argument For SPT

- (1) Time's special treatment in our ordinary language is not necessary; time could be treated in ordinary language in just the way space is, without our thereby losing some of

our ability to describe accurately objective features of the world.

(2) If (1), then SPT is true.

(3) SPT is true.

Arguments such as these have appeared convincing to many. But those who have wanted to reject either of these arguments have generally not challenged the second premise of that argument – the one that makes the connection between the seemingly linguistic first premise and the seemingly metaphysical conclusion. It is the first premises that have been controversial. Thus, almost all of the action has centered on the (apparently) linguistic theses in question.³

In what follows, I will refer to the first premise of The Linguistic Argument Against SPT as “*the linguistic thesis of passage,*” or “LP.” Similarly, I will refer to the first premise of The Linguistic Argument for SPT as “*the linguistic thesis of non-passage,*” or “LNP.” What is at issue is whether either one of these rival linguistic theses can be proven. In light of the above arguments, it appears that if either LP or LNP could be proven, then we would have a sound argument for the corresponding metaphysical thesis (i.e., either SPT or its negation). In that case, all that would remain would be the task of spelling out a somewhat sketchy metaphysical thesis that we nevertheless know to be true. So it seems that our immediate concern should be to determine whether time’s special treatment in our ordinary language is somehow necessary.

The most obvious way in which time is accorded special treatment in ordinary language is in the existence of verbal tenses. We have sentences like ‘It is raining’, ‘It was raining’ and ‘It will be raining’, but it seems that there is nothing analogous in the case of space.

The matter is not quite so simple, however. It’s true that the phenomenon of tenses is generally the focus of discussions of LP and LNP, but it’s also true that in these discussions ‘tense’ is usually taken to refer to a phenomenon more

³ The most notable exceptions to this rule have been attempts by certain non-passage theorists to show that the metaphysical claims of the passage theory lead to absurdities or contradictions. See, for example, Smart, “The River of Time.” The question of whether the metaphysical claims of the passage theory do indeed lead to absurdities or contradictions is of course an important question, but it is one that is beyond the scope of this paper.

general than that of mere verbal tense. This more general phenomenon is taken to be one that is manifested by any sentence that may have different truth-values at different times. And the question of whether we can treat matters temporal in our ordinary language in the way we treat matters spatial is generally taken to boil down to the question of whether we can do without such sentences. As James Plecha has recently remarked,

It is commonly believed that if language can be detensed, if, roughly, sentences which change their truth values can be translated by sentences which do not, then ours is a four-dimensional block universe and there is no absolute present. [Plecha, "Tenselessness and the Absolute Present," p. 529.]

Thus, questions about LP and LNP take us to the question of whether language can be detensed – whether sentences that may change their truth-values can be translated by sentences that may not. This is the main question that I will address in this paper. First it will be necessary to spell out the question and some related issues in a clear and useful way. Once this has been done, it will be seen that there are available to proponents of LP and LNP, respectively, different semantical views about the relations among propositions, truth and time. Hence, LP and LNP will each be shown to involve what amounts to a package of different but related linguistic views.

Since LP and LNP are packages of linguistic views that are supposed to be used in arguments supporting the metaphysical theses corresponding to them, I will consider whether there are any arguments that can support these linguistic packages. After looking at what I take to be the best of such arguments that are available, I will conclude that, while there may be arguments with key *metaphysical* premises that could be taken to support each of these linguistic packages, there are no good arguments with purely linguistic premises that can be appealed to in support of either LP or LNP.

This means that one cannot appeal to LP in any argument designed to prove the metaphysical theses of the passage view (such as The Linguistic Argument Against SPT) without begging the question, since LP itself cannot be defended without appeal to metaphysical theses. But similarly, one cannot appeal to LNP in any argument designed to prove the metaphysical theses of the non-passage view (such as The Linguistic Argument For SPT) without begging the question, because LNP cannot be defended without appeal to metaphysical theses.

In short, I will conclude that the metaphysical issues involved in the question of whether time passes *cannot* be decided by first deciding the

linguistic issues involved, as has been supposed by such writers as Goodman, Quine, Smart, Prior, Gale, Schlesinger, Mellor and Smith. Rather, it must be the other way around: the metaphysical issues must be decided first, and this will lead to a resolving of the linguistic issues.

II. Some Terms

In the debate over the possibility of detensing language, a good deal of the discussion has focused on alleged similarities and differences among sentences like the following:

- (1) It's raining.
- (2) Rain falls on Wednesday, February 17, 1988.
- (3) The falling of rain is simultaneous with this token.
- (4) The Battle of Hastings took place nine hundred and twenty-two years ago.
- (5) The date of the Battle of Hastings is 1066.
- (6) The Battle of Hastings occurs nine hundred and twenty-two years before this token.

Various claims have been made concerning the classes of sentences represented by (1)-(6). It has been suggested, for example, that (1) and (4) represent an entirely different class of sentences than do (2), (3), (5) and (6), because sentences of the former kind, but not sentences of the latter kind, can change their truth-values;⁴ but it has also been suggested that this is false because sentences like (1) and (4) do not properly express any propositions at all, unless they express propositions like those expressed by the other sentences.⁵ What has normally been taken to be at stake here is whether sentences like (1) and (4) can in some important sense be translated by sentences like the others – whether, in the popular jargon, language can be detensed. But this issue, which has long been at the center of the debate concerning language and the passage of time, is an elusive one, partly because it is not immediately clear how we ought to understand the expressions 'tensed language' and 'tenseless

⁴ Cf., for example, Gale, *The Language of Time*, Chapter IV.

⁵ Cf., for example, Goodman, *The Structure of Appearance*, pp. 287ff.

language', or the notion of *detensing language*. I will try to get clear on these and related issues below.

In what follows I will assume, without argument, that there is a clear distinction to be drawn between *expression types* and *expression tokens*.⁶ For the sake of convenience I will adopt an *ad hoc* convention for the purpose of distinguishing between mention of an expression type and mention of an expression token. I will use single quotes when I want to refer to an expression type, and slash marks when I want to refer to a token. Thus, an expression token consisting of a single quote followed by some expression followed by another single quote will refer to the expression type represented by the expression token inside the single quotes; and an expression token consisting of a slash mark followed by some expression followed by another slash mark will refer to the expression token inside the slash marks. In addition, I will sometimes use proper names for expression tokens inside of single quotes as a way of referring to the expression type represented by the token named; thus,

'(1)'

is to be read as shorthand for

the expression type represented by (1).

There are many important questions about types and tokens that I do not wish to raise here. The purpose of the distinction in the present context is simply to provide a basis for making some other distinctions that are relevant to issues about time and language. To begin with, there is a distinction between two different kinds of sentence type: those that are tensed, and those that are tenseless. It is natural to say, for example, that '(1)' is a tensed sentence type while '(2)' is a tenseless sentence type, and that the crucial difference between the two is that the former, but not the latter, can have different tokens that express things with different truth-values. That is, it may be the case that at one time a sentence that is a token of '(1)' expresses something true, while at another time a different token of the same type expresses something false; but it seems that such a thing cannot happen in the case of '(2)'.

⁶ For examples of discussions in which this distinction is drawn, see, Peirce, *The Simplest Mathematics*, (vol. IV of his *Collected Papers*), p. 423; Goodman, *The Structure of Appearance*, pp. 287ff; Quine, *Word and Object*, pp. 194-195, and *Philosophy of Logic*, pp. 55ff; and Devitt and Sterelny, *Language and Reality*, p. 59.

The distinction between tensed and tenseless sentence types can, I think, be captured by the following pair of definitions.⁷

(D1) *S* is a *tensed sentence type* =df it is possible that a token of *S* at one time expresses a proposition with one truth-value and another token of *S*, at another time, expresses a proposition with another truth-value, even if the two tokens of *S* refer to the same places, people and things.

(D2) *S* is a *tenseless sentence type* =df it is not possible that a token of *S* at one time expresses a proposition with one truth-value and another token of *S*, at another time, expresses a proposition with another truth-value, if the two tokens of *S* refer to the same places, people and things.⁸

⁷ For similar definitions see Sosa, "The Status of Becoming: What is Happening Now?" p. 27; Gale, *The Language of Time*, pp. 40ff., especially p. 49; Goodman, *The Structure of Appearance*, p. 290; and Quine, *Philosophy of Logic*, p. 14.

⁸ One difficulty facing these definitions as they stand results from the fact that people can use expressions in non-standard ways. Thus, for example, Ernie may say to Bert prior to the meeting, "Remember, if I say 'Two plus two equals four', that means that I want you to vote in favor of the motion." A similar difficulty results from the fact that the rules of any language are subject to change. Thus, there is nothing to prevent a group of people from one day deciding to use tokens of 'Two plus two equals four' to express the proposition that the moon is made of Swiss cheese. For these and similar reasons it turns out that even 'Two plus two equals four' is a tensed sentence type, according to (D1).

In order to get around such difficulties, in a way that leaves out nothing that is important to the spirit of our inquiry, we can, adopting a suggestion from Goodman (Goodman, *The Structure of Appearance*, p. 290; see also Quine, *Philosophy of Logic*, p. 14), stipulate that when discussing tensed types, tenseless types, and related matters, we mean to confine the discussion to expressions all occurring within an appropriately limited discourse. I.e., we will be considering only types whose tokens are expressions all of which occur in the context of a group of people speaking, and writing, a single language, using expression types sincerely and in a uniform way.

III. The Issue

It is now possible to state more explicitly what is at issue between the passage theorists who have been concerned with language and the non-passage theorists who have been concerned with language. As it is often characterized, the issue is whether, and to what extent, language is irreducibly tensed. What is at stake in the issue is whether all, some or none of what is expressible in tensed language can be expressed in tenseless language. The difference between tensed and tenseless language, as the terms are normally understood, is the difference between utterances and inscriptions that are tokens of tensed sentence types, on the one hand, and utterances and inscriptions that are tokens of tenseless sentence types, on the other hand. As I see it, then, the issue can best be understood in terms of the question, Can we, in principle at least, do without tensed sentence types? I.e., can we express all of the things that we normally express, using tokens of both tensed and tenseless sentence types, if we restrict ourselves to using only tokens of tenseless sentence types?

The two sides to this dispute, then, are represented by the following two theses:

The tenseless view of language (TL): We could eliminate tensed sentence types from our language without thereby losing some of our ability to describe accurately objective features of the world.

The tensed view of language (TD): We could not eliminate tensed sentence types from our language without thereby losing some of our ability to describe accurately objective features of the world.

In order to get a handle on this issue, it will first be necessary to spell out another controversy that, it will be seen, is closely related to this one. I will turn to this other controversy in the next section.

IV. Three Ways of Thinking About Propositions, Truth and Time

In addition to the distinction between tensed and tenseless sentence types there is also, it seems, a sense in which we can distinguish between what might be called tensed propositions, on the one hand, and what might be called tenseless propositions, on the other hand. Prior has remarked that

Prima facie, we may divide propositions, or ostensible propositions, into two sorts. There are those, such as ‘Socrates is sitting down’ or ‘Socrates was sitting down’, of which it obviously makes sense to ask ‘*When* are they true?’, though the answer may in some cases be ‘Always’ or ‘Never’. And there are, on the other hand, those of which it does not so obviously make sense to ask this question; one sub-species of these would be exemplified by ‘Two and two are four’, and another by ‘The date of the Battle of Hastings is 1066’. [Prior, *Worlds, Times and Selves*, p. 67.]

Propositions of the first kind, if there are any, are propositions to which we may sensibly ascribe truth-values *at times*. It is natural to think, for example, that we can sensibly ascribe to the proposition that Socrates is sitting down the truth-value *true* at some time, *t*, and that we can also sensibly ascribe to the same proposition the truth-value *false* at some other time, *t'*.

Propositions of the second kind, if there are any, are propositions to which we may *not* sensibly ascribe truth-values *at times*. For example, it might be said that we cannot sensibly ascribe to the proposition that two and two are four the truth-value *true* at the time *t*, even though we can sensibly ascribe to that proposition a truth-value – we can say that the proposition is true *simpliciter*. For it seems natural to say, with regard to such propositions, which could not in any case have different truth-values at different times, that time therefore does not enter into the ascriptions to them of truth-values.

What is really revealed by the apparent distinction between propositions that can be said to be true or false *at times*, on the one hand, and propositions that can only be said to true or false *simpliciter*, on the other hand, is a distinction between different ways of thinking about propositions, truth and time, and the connections among these. And these different ways of thinking about propositions, truth and time, of which there are three, really represent three different ways of doing semantics. They may be formulated as follows.⁹

⁹ I am assuming that propositions, and not, say, sentence tokens, are the bearers of truth and falsity. For discussions of this issue, the issue raised by TDVP, TLVP and MVP, as well as some related issues, see Kaplan, “Dthat,” “On the Logic of Demonstratives,” and *Demonstratives*; and Lewis, “General Semantics.”

The tensed view of propositions (TDVP): Propositions have truth-values *at times*; the most fundamental semantical locution is “P is v at t”, where the term in place of ‘P’ refers to some proposition, the term in place of ‘v’ refers to some truth-value, and the term in place of ‘t’ refers to some time.

The tenseless view of propositions (TLVP): Propositions have truth-values *simpliciter*; the most fundamental semantical locution is “P is v”, where the term in place of ‘P’ refers to some proposition and the term in place of ‘v’ refers to some truth-value.

The mixed view of propositions (MVP): Some propositions have truth-values *at times*; the most fundamental semantical locution for these propositions is “P is v at t”, where the term in place of ‘P’ refers to some proposition, the term in place of ‘v’ refers to some truth-value, and the term in place of ‘t’ refers to some time; but some other propositions have truth-values *simpliciter*; the most fundamental semantical locution for these propositions is “P is v”, where the term in place of ‘P’ refers to some proposition and the term in place of ‘v’ refers to some truth-value.

V. Are Tensed Sentence Types Elimidable?

It is important to distinguish among several different variations of TL. These different theses represent different ways of trying to carry out the relevant elimination. The first and perhaps most natural of these is a thesis involving type-for-type translations of tensed sentence types by tenseless sentence types. The thesis may be formulated as follows:

TLa: For every tensed sentence type, T , there is some tenseless sentence type, T' , such that every token of T could be replaced, without loss of meaning, by a token of T' .

It is not difficult to find an account that at least appears to be an attempt at filling out TLa. In a famous passage in his essay, “The River of Time,” Smart writes

When we say that the boat ‘*was* upstream, *is* level, *will be* downstream’, we are saying that occasions on which the boat is upstream are *earlier than* this utterance, that the occasion on

which it is level is *simultaneous with* this utterance, and that occasions on which it is downstream are *later than* this utterance. That is, a language could be devised in which temporal copulae did not exist, but in which we used the words ‘earlier than’, ‘later than’, or ‘simultaneous with’ in combination with a non-temporal copula and the expression ‘this utterance’. This language would not contain words like ‘past’, ‘present’, and ‘future’. For example, ‘is past’ would be translated by ‘is earlier than this utterance’. [Smart, “The River of Time,” p. 224.]

This passage has been much discussed in the literature on questions about the passage of time, and the detensing of language. The account proposed here by Smart, according to which each token of a tensed sentence type is really about some temporal relation between the token itself and some other event, is widely referred to as “the token reflexive analysis” of tensed language. Does the token reflexive analysis provide a way of filling out the claim made by TLa?

Consider the following sentences.

(13) The boat was upstream.

(14) Occasions on which the boat is upstream are earlier than this utterance.

It appears that in the passage above Smart is suggesting that ‘(13)’, a tensed sentence type, could be translated by ‘(14)’, which appears to be a tenseless sentence type.

The first question to be addressed here is whether ‘(14)’ is indeed a tenseless sentence type; it is not immediately clear that it is, since it is possible for there to be different tokens of ‘(14)’ that express propositions with different truth-values. The answer to this question, however, is that ‘(14)’ is indeed a tenseless sentence type, because it is not possible for there to be different tokens of it that express propositions with different truth-values, *if the different tokens refer to the same places, people and things*.¹⁰

The next question to be addressed is whether every token of ‘(13)’ could be replaced by a token of ‘(14)’ without loss of meaning. Let us consider an example. Suppose that at t1 Smart uttered a token of ‘(13)’. Call that token

¹⁰ If, for example, Smith and Jones are discussing an utterance of Smart’s, and they utter non-simultaneous tokens of ‘(14)’, each referring to Smart’s utterance.

"/13/". Could /13/ be replaced with a token of '(14)' without loss of meaning? Well, consider the non-actual utterance that would have resulted from Smart's tokening of '(14)' in place of /13/; call that putative utterance "/14/". Would /14/ have had the same meaning that /13/ in fact had?

Here I must digress in order to introduce two final presuppositions that will greatly facilitate the discussion of the present issue. In what follows I will assume, without argument, (i) that declarative sentences generally express propositions, and (ii) that propositions are ordered sets, as suggested by Russell.¹¹ My only reason for making these assumptions (apart from the fact that I believe them to be true) is that doing so will make certain issues about time and semantics considerably easier to discuss. Moreover, these assumptions will neither help nor hurt any of the parties to our dispute about the passage of time. The assumptions in question will simply make it possible to spell out each of the relevant views in a clearer fashion than would otherwise be possible.

Now let us return to the controversy at hand. Would /14/ have had the same meaning that /13/ in fact had? The answer to this question, even if we grant Smart the tenseless view of propositions and the token reflexive analysis of tensed sentence types, is *No*. For if the tenseless view of propositions is correct, and so is the token reflexive analysis of tensed sentence types, then /13/ expresses the proposition <earlier-than, occasions on which the boat is upstream, /13/>, while the proposition that would have been expressed by /14/ is the proposition <earlier-than, occasions on which the boat is upstream, /14/>. These propositions are distinct. Hence sentence tokens that express them cannot be said to have the same meaning.

One who wished to make use of the token reflexive analysis in order to fill out the claim made by TLa need not abandon hope yet, however. The token reflexive analysis can be revised in such a way that this difficulty is obviated. Consider what might be called "the context reflexive analysis of tensed language," according to which each token of a tensed sentence type is really about some temporal relation between *the context of that token* and some other event or events. On this analysis, the correct translation of /13/ would be a token of the sentence type represented by the following sentence token.

¹¹ As far as I can tell, this view goes back to Russell's *The Principles of Mathematics*.

- (15) Occasions on which the boat is upstream are earlier than this context.

Call the putative utterance that would have resulted from Smart's tokening of '(15)' in place of /13/ "/15/". Now the advocate of TLa and the context reflexive analysis can plausibly say that the proposition expressed by /13/ is the proposition <earlier-than, occasions on which the boat is upstream, the context of /13/>, and that the proposition that would have been expressed by /15/ is the proposition <earlier-than, occasions on which the boat is upstream, the context of /15/>. But, of course, since the context of /15/ would have been the same context as the context of /13/, there are not really two propositions here; the proposition that /15/ would have expressed *is* the proposition that /13/ expressed.

Unfortunately, an advocate of TLa who tried to take this line would now run into an even more serious problem: '(15)' is not a tenseless sentence type. For it is clear that different tokens of '(15)' can express propositions with different truth-values, even if those tokens refer to the same places, people and things; the difficulty, of course, is that such tokens may well refer to different times.

In short, the token reflexive analysis fails to vindicate TLa because it produces tenseless sentence types that are not adequate translations of the tensed sentence types they are meant to translate; the difficulty is that the tokens of tenseless sentence types that are produced are not *about* the same things as the tokens of tensed sentence types that they are meant to replace. Meanwhile, the context reflexive analysis fails to vindicate TLa because the sentence types it generates are tensed sentence types. I take this as evidence showing that Smart did not intend the token reflexive analysis suggested in the above passage to be one by means of which we can eliminate tensed sentence types through some type-for-type translation procedure.¹²

If the analysis proposed here by Smart is not meant to incorporate a type-for-type translation scheme that reveals the eliminability of tensed sentence types, then what would such a translation scheme – i.e., one suitable for filling out the claim made in TLa – look like?

¹² I suspect that what Smart had in mind when writing the relevant passage was rather a procedure whereby expressions such as 'is past', 'is present' and 'is future', which appear to express monadic temporal properties, could be eliminated in favor of expressions that clearly express binary temporal relations.

I don't know exactly what a translation scheme suitable for filling out the claim made in TLa would look like, or even what a rough proposal along the appropriate lines would be like; but I think it can be easily shown that any such scheme or proposal is doomed to failure. Consider some tensed sentence type, S , and its proposed tenseless translation, S' . Let S be one of the many tensed sentence types that not only *can* have different tokens that express propositions with different truth-values, but in fact *does* have different tokens that express propositions with different truth-values, even though those tokens refer to the same places, people and things. Let u_1 and u_2 be such tokens. Then let u_1' and u_2' be the tokens of S' that are meant to translate u_1 and u_2 , respectively; i.e., u_1' is the utterance that would result from the tokening of S' in the context of u_1 , and u_2' is the utterance that would result from the tokening of S' in the context of u_2 .

Suppose that u_1' and u_2' express propositions with different truth-values. Since S' is a tenseless sentence type, we know that u_1' and u_2' can express propositions with different truth-values only if they refer to different places, people or things. But in that case u_1 and u_2 refer to the same places, people and things, but u_1' and u_2' , which are meant to translate u_1 and u_2 , respectively, do not refer to the same places, people and things. It follows that at least one of u_1' and u_2' is a bad translation of the token it is meant to translate.

Suppose, on the other hand, that u_1' and u_2' express propositions with the same truth-value. Then S and S' are such that there is some context – either the context of u_1 and u_1' , or else the context of u_2 and u_2' – in which a token of S would express a proposition with one truth-value, and a token of S' , which is meant to replace the token of S without loss of meaning, would express a proposition with a different truth-value.

It is not at all obvious what we should say about the meanings of sentence types in general. Is it appropriate to say that sentence types *have* meanings? If so, how are we to characterize these meanings? Similarly, it is not at all obvious what we should take to be the criteria for one sentence type's being a good translation of another, or under what circumstances we should say that one utterance could replace another without loss of meaning.

But no matter what we say about these matters, it does seem clear that in the case we are considering, S' cannot be said to be a good translation of S , nor can a token of S' that would express a proposition with one truth-value be said to be capable of replacing a token of S in some context without loss of meaning, if the token of S expresses a proposition with a different truth-value.

This is bad news for TLa, but it is not necessarily bad news for the claim that tensed sentence types can be eliminated. All that the above shows is that the elimination cannot be carried out by means of a type-for-type translation scheme. An approach that will fare much better than TLa is the following:

TLb: For every utterance, u , there is some tenseless sentence type, T , such that a token of T in the context of u would have had the same meaning as u .

Consider Tom's uttering, in Amherst at t_1 , a token of 'It's raining'. TLb implies that there is some tenseless sentence type, T , such that a token of T in this context (i.e., one uttered by Tom in Amherst at t_1) would have expressed the same proposition as Tom's utterance of a token of 'It's raining'.

Is there such a tenseless sentence type, i.e., one that Tom could have tokened in the place of his actual utterance in order to express the same proposition as the one he in fact expressed? This is an easy question to answer. If the tenseless view of propositions is true, then the answer is 'Yes'; if the tensed view of propositions is true, then the answer is 'No'.

For suppose the tenseless view of propositions is true. Then the proposition expressed by Tom's actual utterance is something like the tenseless proposition $\langle \text{being-rainy-at-}t_1, \text{Amherst} \rangle$. This proposition could have been expressed by Tom in the same context by his uttering a token of 'It rains in Amherst at t_1 '. This latter sentence type is a tenseless one – if it can ever be used to express a true proposition, then it can always be used to express a true proposition. Hence, there is some tenseless sentence type that would have served Tom just as well in this context as 'It's raining'.

But, on the other hand, if the tensed view of propositions is true, then the proposition expressed by Tom's token of 'It's raining' is something like the proposition $\langle \text{being-rainy}, \text{Amherst} \rangle$. This is a tensed proposition with different truth-values at different times. Because of this, and for the reasons mentioned above, it is a proposition that can never be expressed by an utterance that is a token of a tenseless sentence type. Certainly 'It rains in Amherst at t_1 ' can't be tokened in order to express the proposition $\langle \text{being-rainy}, \text{Amherst} \rangle$, since any token of this sentence type will express a proposition that is either always true or always false, whereas the proposition expressed by Tom's utterance is, according to the tensed view of propositions, one that is sometimes true and sometimes false.

But just as it is clear that the existence of propositions with different truth-values at different times entails that TLb is false, and that tensed sentence types

are thus ineliminable, so it is also clear that if there exist no tensed propositions (i.e., if the tenseless view of propositions is true), then TLb is true. For consider any utterance that is a token of a tensed sentence type. The proposition expressed by this utterance is a tenseless proposition, according to the tenseless view of propositions. But there is a sort of algorithm for constructing, out of any tenseless proposition, a tenseless sentence type that may be used on any occasion to express that proposition. This is the case in virtue of the fact that it is a consequence of the tenseless view of propositions that there must be some time element or other built into each proposition. The algorithm is this: a) take the time element that is contained in the proposition; b) combine it with the property or relation that is contained in the proposition, if it is not already so combined, thereby getting something like the property red-at-t4, or the relation loves ___ at t2; c) find a predicate that expresses this property or relation (e.g., 'is red at t4', or 'loves so-and-so at t2'); and d) make a sentence with the appropriate subject(s) and object(s), a tenseless copula, and this predicate. The sentence type represented by the resulting sentence is the required tenseless sentence type.

At this point the debate has reached an impasse. Supporters of LP, who say that tensed sentence types are ineliminable, will base their claim on an appeal to the tensed view of propositions. Supporters of LNP, who say that tensed sentence types are eliminable, will base their claim on an appeal to the tenseless view of propositions. It is not at all clear what sort of arguments, if any, would count in favor of one or the other of these semantical views. Are there any such arguments?

One argument that suggests itself in favor of the tensed view of propositions is this: it is natural to say that different tokens of a single sentence type generally have the same meaning. Take, for example, ten different utterances, by ten different schoolchildren, that are all tokens of 'The date of the Battle of Hastings is 1066'. Don't all of these utterances have the same meaning? There is great plausibility in the idea that they do. Indeed, it is natural to say that, in general, the meaning of a sentence token is simply the meaning that is associated with the type represented by that token. This means, however, that a t1 token, in Amherst, of 'It's raining' and a t2 token of the same type, and in the same place, have the same meaning. Thus we can rule out the tenseless view of propositions, according to which two such utterances must be said to have different meanings; for on that view, the t1 token expresses the proposition <being-rainy-at-t1, Amherst>, while the t2 token expresses the proposition

<being-rainy-at-t2, Amherst>. We are then left with the tensed view of propositions as the one that matches our intuitions on this matter.

This argument ought not to convince anyone who holds the tenseless view of propositions. Such a person need only exploit a component of the tenseless view of propositions that has already been hinted at. We must distinguish between the kind of meaning that a sentence type may be said to have, on the one hand, and the kind of meaning that a sentence token may be said to have, on the other hand. Sentence tokens, we can say (or anyway tokens of declarative sentence types), express propositions, which are their meanings. Sentence types, on the other hand, can not be said to have propositions as their meanings, since different tokens of a single sentence type may express different propositions. This does not mean that sentence types must be without meanings, however. The meaning of a (declarative) sentence type, we can say, is something like a function from contexts to propositions. The meaning of 'It's raining', for example, is a function that goes from different contexts to different propositions. The meaning of 'The date of the Battle of Hastings is 1066', on the other hand, is a function that goes from different contexts to a single proposition. That, according to one who holds the tenseless view of propositions, is the difference between tensed and tenseless sentence types. On this view, then, our intuition according to which sentence types may be said to have meanings, as well as our intuition according to which different tokens of a single sentence type may be said to have some meaning in common, can both be preserved.

In fact, it is the tensed view of propositions that might be in a precarious position here. For in light of the distinction between the kind of meaning that a sentence type may have (i.e., a function from contexts to propositions, hereafter referred to as the *sense* of the sentence type) and the kind of meaning that a sentence token may have (i.e., the proposition expressed by that token), it seems that an argument can be developed against the tensed view of propositions. The argument is based on close analogies between tensed sentence types and what might be called *personally indexed* and *spatially indexed* sentence types.

Consider the sentence type 'Washington slept here'. This is what I call a spatially indexed sentence type; it may have different tokens that have different truth-values in virtue of the fact that they occur at different places. It is very natural to treat this sentence type in a way analogous to the way the tenseless view of propositions treats tensed sentence types: the sense of the sentence type is a function from contexts to propositions. In this case the crucial element of

the contexts involved will be their locations in space – the function goes from contexts including Valley Forge to the proposition that Washington slept in Valley Forge, and it goes from contexts including Amherst to the proposition that Washington slept in Amherst. In keeping with the analogy to tensed sentence types, we can say that propositions have truth-values *simpliciter*, and merely add that propositions have spatial elements built into them, just as propositions have temporal elements built into them.

Consider the sentence type ‘I’m Wayne Gretzky’. This is what I call a personally indexed sentence type; it may have different tokens that have different truth-values in virtue of the fact that they are uttered by different people. It is also very natural to treat this sentence type in a way analogous to the way the tenseless view of propositions treats tensed sentence types: the sense of the sentence type is a function from contexts to propositions. But in this case, the crucial element of the contexts involved will be the people uttering the tokens – the function goes from any context in which Eddie Murray is the utterer to the proposition that Murray is Gretzky, and it goes from any context in which Gretzky is the utterer to the proposition that Gretzky is Gretzky. Again, we can continue to say that propositions have truth-values *simpliciter*, merely adding that some propositions, at least, are about people.¹³

It does indeed seem that there are close analogies to tensed sentence types here. But one who holds the tensed view of propositions must be wary of taking such analogies too seriously. If such a one is willing to accept such analogies wholeheartedly, then he or she may well be forced to admit that we should treat spatially indexed sentence types and personally indexed sentence types in the manner of tensed sentence types, and this, it seems, will lead to saying that some propositions, at least, are the kinds of things that can have different truth-values at different *places*, or else different truth-values at different *people*. But these latter claims, a proponent of the tenseless view of propositions might well argue, are absurdities.

The argument from analogy may be formulated as follows.¹⁴

¹³ For discussions of these and related issues, see Casteñeda, “Indicators and Quasi-indicators,” and Perry, “The Problem of the Essential Indexical.”

¹⁴ Cf. Quine, *Word and Object*, p. 173, for what appears to be a passage suggesting at least the personal part of this argument.

The Argument From Analogy

- (1) The analogies among tensed, spatially indexed, and personally indexed sentence types are so close that we ought, in our semantical analyses, to treat all of these kinds of sentence types in the same manner.
 - (2) Treating tensed, spatially indexed, and personally indexed sentence types in the same manner semantically means saying either (a) all propositions have truth-values *simpliciter*, or else (b) propositions can have different truth-values at different times, and they can have different truth-values at different places, and they can have different truth-values at different people.
 - (3) Alternative (b) is untenable; it would be ridiculous to say that propositions can have different truth-values at different places, or that propositions can have different truth-values at different people.
-
- (4) We must say that all propositions have truth-values *simpliciter*.

It seems to me that there are two effective responses to this argument available to one who holds the tensed view of propositions, and that these two responses are mutually compatible, so that it is possible for such a one to make them both. The first of these responses is simply to bite the bullet and embrace the idea that some propositions can have different truth-values at different places, as well as the idea that some propositions can have different truth-values at different people, thereby rejecting premise (3) of the argument. A response of this kind will require a complication in our semantics, as it will be necessary to say that the most fundamental semantical ascriptions of truth-values are of the form "P is v at t at s at r", where the terms in place of 'P', 'v', 't', 's' and 'r' refer to a proposition, a truth-value, a time, a place and a person, respectively. Still, complicated though such an account may be, there is nothing incoherent about it, as far as I can tell. Nor are there, as far as I know, any convincing arguments against it. So I think the rejection of premise (3) of this

argument is a move that one who holds the tensed view of propositions ought not to be afraid of making.¹⁵

The other response available to such a person, however, is a response that is considerably more plausible. This second response involves rejecting premise (1). People who hold that tensed sentence types are ineliminable, and that language cannot be detensed, are the people who hold various metaphysical views that move them to say that time passes. In general, all the people who say that time passes believe, or should believe, that there are crucial disanalogies of some kind between time and the dimensions of space. They believe that it makes sense to say that time passes, for example, but not to say that space passes. Hence it makes sense for these people to point to these alleged differences between time and space as reasons for rejecting premise (1) of The Argument From Analogy. That is, one who holds metaphysical views according to which there are profound differences between time and space can point to these differences as reasons for maintaining that we ought not to treat spatially indexed and personally indexed sentence types in the manner in which we treat tensed sentence types.

Of course, the appropriate rejoinder for the would-be detenser of language to make at this point is that time and space are essentially analogous, metaphysically speaking (whatever he or she means by that), so that we have good reasons for treating them analogously when it comes to semantics. Here we have again reached an impasse. The two sides disagree on a semantical issue, and they each claim to have good metaphysical reasons for holding their semantical views. The matter cannot be decided without venturing outside of the realm of linguistics.

We have seen that The Argument From Analogy fails to show that the tenseless view of propositions is the correct view. If it had been successful, it would have constituted an excellent reason for maintaining that TLb is true, and that tensed sentence types are therefore eliminable. From this it would have followed that LNP is true. But The Argument From Analogy results in an impasse. Are there any arguments or counter-examples that can show that LNP is false, and, hence, that LP is true? I think that there are not. But is worth seeing why some of the alleged counter-examples that have been proposed in fact fail. The best attempt at such a counter-example is one that is presented by Gale in

¹⁵ This line has in fact been advocated by some philosophers. See, for example, Sosa, "Propositions and Indexical Attitudes."

his *The Language of Time* (in the following passage Gale uses the term ‘A-sentence’ to mean roughly what I mean by ‘tensed sentence type’; similarly, he uses ‘B-sentence’ to mean roughly what I mean by ‘tenseless sentence type’):

Joe is a scout for a machine-gun company. He is strategically stationed so that he can survey the battlefield, and when the enemy approaches within 100 yards of their position he must inform the company of this fact. The company commander will then collate this piece of information with other information, such as whether enemy fighter planes are then overhead and could spot their position if they fired, and decide whether or not to give the company the order to open fire.

The crucial question concerns whether Joe can alert the company commander of the fact that the enemy is now within a 100-yard range through the use of a B-sentence. There is no question of Joe being able to inform the commander of this fact by the use of an A-sentence, such as ‘The enemy is now within 100 yards’... [Gale, *The Language of Time*, p. 56.]

The issue may be stated in terms that fit into our discussion of TLb in the following way. Suppose that at t1 the enemy advances within one hundred yards of the company. Suppose that Joe does his job: he utters, at t1, a token of ‘The enemy is now within one hundred yards’. His utterance is a token of a tensed sentence type. Is there some tenseless sentence type that Joe could have tokened at t1 in place of what he in fact said, in order to alert the commander of the enemy’s approach? TLb says that there is. Gale says that there isn’t.¹⁶

Suppose Joe uttered, in place of his t1 token of ‘The enemy is now within one hundred yards’, a token of ‘The enemy is within one hundred yards at t1’. According to the tenseless view of propositions, both utterances in question would express the same proposition: <being-within-one-hundred-yards-at-t1, the enemy>. This is, naturally, a tenseless proposition, with a truth-value simpliciter. Since it is the only proposition expressed by Joe’s actual utterance (the t1 token of ‘The enemy is now within one hundred yards’), and since it is

¹⁶ Prior has a similar example and accompanying argument. He presents these in his paper “Thank Goodness That’s Over.” I think that Prior’s example and argument are equally interesting and plausible. I also think that the remarks I make below about Gale’s example apply, *mutatis mutandis*, to Prior’s example.

exactly the proposition that would be expressed by a t1 token of 'The enemy is within one hundred yards at t1', the detenser will argue, the case is not a counter-example to TLb.

Of course, the tensor, who believes the tensed view of propositions, has a different story to tell about the propositions that would be expressed by these two utterances. Gale will say that the proposition expressed by Joe's actual utterance is the tensed proposition <being-within-one-hundred-yards, the enemy>. He will say that this proposition, like any tensed proposition, cannot be expressed by a token of a tenseless sentence type.

It seems that we have again reached an impasse. One side presents what it takes to be a counter-example to TLb, making, in the process, an appeal to the tensed view of propositions. The other side defends TLb against the alleged counter-example, and in so doing makes an appeal to the tenseless view of propositions.

But is that all there is to the matter? Can't the tensor present a stronger case by making the very plausible claim that something is lost in the translation to a tenseless sentence type? Gale points out that a t1 token of 'The enemy is within one hundred yards at t1' might fail disastrously to convey the requisite information. Perhaps the commander doesn't know the time. He hears Joe's token of the tenseless sentence type, but this doesn't let him know *when* the enemy is in range, since he doesn't know when it is t1. Thus a token of a tensed sentence type has been eliminated, but the result is that a crucial piece of information has been left out. Men die. Battles are lost. Empires fall. All in the name of preserving a misguided linguistic thesis.

As a first response to this, the detenser can say the following. Regardless of whether the commander knows that it is t1, and that Joe's token of 'The enemy is now within one hundred yards' thereby expresses the tenseless proposition that the enemy is within one hundred yards at t1, this is still the proposition expressed. Similarly, I might not know that Sylvanian is the Armenian ambassador, and thus when you utter a token of 'The Armenian ambassador is a tiddleywinks player', I won't know who is being said to be a tiddleywinks player. Certainly I won't know that the proposition you express is the proposition <being-a-tiddleywinks-player, Sylvanian>, even if I am well-acquainted with Sylvanian. And the fact that this piece of information is not conveyed to me might prove disastrous when I soon launch into a long philippic, in Sylvanian's presence, degrading that game of dexterity and

precision. Does it follow from this that proper names cannot be eliminated from our language, to be replaced by definite descriptions? I don't know.

I think, however, that there is a much more effective, and much less controversial, response available to the detenser. He or she need only point out that Joe's token of 'The enemy is now within one hundred yards' is, in addition to being a token of a tensed sentence type, also a token of a spatially indexed sentence type. For whether tokens of this type express something true depends not only on when they occur, but also on where they occur. But consider the following thesis.

SLb: For every utterance, u , there is some non-spatially indexed sentence type, T , such that a token of T in the context of u would have had the same meaning as u .

This brings up the question, Could Joe have expressed what he expressed by tokening a non-spatially indexed sentence type? Suppose the position of the company is 15 degrees West, 50 degrees North. The the proponent of SLb will say that Joe's utterance expressed the proposition <being-within-one-hundred-yards-of-15W-50N-at-t1, the enemy>. This is a proposition that does not have truth-values at times, or at places; it just has a truth-value *simpliciter*. According to such a person, then, Joe could have expressed the same proposition, in the same context, by uttering a token of 'The enemy is within one hundred yards of 15W-50N at t1'. But of course the commander might not know that his company's position is 15W-50N, just as he might not know that the time is t1. Hence, this alternative utterance by Joe would be disastrously lacking in informative content.

Now it should be clear that the tensor has failed to provide the kind of counter-example that would disprove LNP. For, although the tensor has succeeded in presenting what appears to be a counter-example to TLb, the detenser has, through the use of some parallel reasoning involving SLb, managed to show that tensed sentence types are exactly on a par with spatially indexed sentence types, as far as eliminability and Gale-type counter-examples are concerned (it could also be shown that personally indexed sentence types are in the same boat). That is, tensed sentence types are neither more nor less eliminable – without loss of informative content – than spatially indexed (and personally indexed) sentence types. What the tensor needed to prove, in order to have an argument for LP, was that tensed sentence types are uneliminable in a way that sets them apart from spatially indexed (and personally indexed) sentence types. In light of SLb (and its personal analogue), we can see that this

cannot be proven. This fact will be taken by the detenser to be further evidence for LNP and the tenseless view of propositions.

The tenseser's only response to this will be to say that there are profound metaphysical differences between time and space (and matters personal), so that there is a good reason for allowing time to play a special role in our semantics. Thus, tensed sentence types play a unique role in our language, unlike that of their spatial and personal counterparts, and, hence, LP is true. But now we have once again reached an impasse. The debate over linguistic matters, i.e., the debate over LP and LNP, turns on semantical considerations, and the relevant semantical views, namely, the tensed and tenseless views of propositions, on which the tensesers and detensers base their arguments concerning the alleged necessity of time's special treatment in our ordinary language, can only be supported with non-circular arguments by raising metaphysical issues.

VI. Conclusion

In short, the situation regarding language and the passage of time is this. A person may consistently hold either of the two views concerning time's special treatment in our ordinary language, LP and LNP, provided that that person also holds the appropriate view from among several semantical views available. Each of these different semantical views, in turn, can be consistently maintained in such a way that it is not susceptible to arguments from the other side, provided that these arguments do not appeal to metaphysical considerations. But of course advocates of either The Linguistic Argument For SPT or The Linguistic Argument Against SPT may not appeal to metaphysical claims in defense of either LNP or LP, since these allegedly linguistic theses are to be used in arguments designed to prove just such metaphysical claims. Moreover, if the different parties to the dispute between LP and LNP do appeal to metaphysical considerations, then they may be able to develop non-circular, non-question-begging arguments for their respective linguistic theses. What those metaphysical considerations might be, and what arguments might be developed from them, are important topics to be considered, but I will not consider them here. The point of this paper has been to show that those who

wish to debate the question of whether time passes cannot settle the debate merely by discussing linguistic matters.¹⁷

¹⁷ I am grateful to David Cowles, Fred Feldman, Edmund Gettier, Gareth B. Matthews, R. Cranston Paul, Thomas Ryckman, Linda Wetzel, and two anonymous referees for helpful comments on earlier versions of this paper.

References

- Casteñeda, H., 1967, "Indicators and Quasi-indicators," *American Philosophical Quarterly* 4, pp. 85-100.
- Devitt, M., and Sterelny, K., 1987, *Language and Reality*, Massachusetts Institute of Technology Press, Cambridge, MA.
- French, P., Uehling, T., and Wettstein, H., (editors), 1979, *Contemporary Perspectives in the Philosophy of Language*, University of Minnesota Press, Minneapolis.
- Gale, R., 1968, *The Language of Time*, Routledge & Kegan Paul, London.
- Goodman, N., 1951, *The Structure of Appearance*, Harvard University Press, Cambridge, MA,.
- Kaplan, D., 1979, "Dthat," in French, P., Uehling, T., and Wettstein, H., (editors), *Contemporary Perspectives in the Philosophy of Language*, University of Minnesota Press, Minneapolis, pp. 383-400.
- Kaplan, D., 1979, "On the Logic of Demonstratives," in French, P., Uehling, T., and Wettstein, H., (editors), *Contemporary Perspectives in the Philosophy of Language*, pp. 401-412.
- Kaplan, D., 1980, *Demonstratives*, in Almog, J., Perry, J., and Wettstein, H., (editors), *Themes from Kaplan*, Oxford University Press, Oxford, pp. 481-563.
- Lewis, D., 1983, "General Semantics," in Lewis, D., *Philosophical Papers*, Volume I, Oxford University Press, Oxford, pp. 189-229.
- Mellor, D.H., 1981, *Real Time*, Cambridge University Press, Cambridge.
- Peirce, C.S., 1934, *Collected Papers*, Harvard University Press, Cambridge, MA.
- Perry, J., 1979, "The Problem of the Essential Indexical," *Nous* 13, pp. 3-21.

- Plecha, J., 1984, "Tenselessness and the Absolute Present," *Philosophy* **59**, pp. 529-534.
- Prior, A.N., 1957, *Time and Modality*, Oxford University Press, Oxford.
- Prior, A.N., 1967, *Past, Present and Future*, Oxford University Press, Oxford.
- Prior, A.N., 1968, *Papers on Time and Tense*, Oxford University Press, Oxford.
- Prior, A.N., 1976, "Thank Goodness That's Over," in Prior, *Papers in Logic and Ethics*, Duckworth, London, pp. 78-84.
- Prior, A.N., and Fine, K., 1977, *Worlds, Times and Selves*, University of Massachusetts Press, Amherst, MA.
- Quine, W.V., 1960, *Word and Object*, Massachusetts Institute of Technology Press, Cambridge, MA.
- Quine, W.V., 1986, *Philosophy of Logic*, Harvard University Press, Cambridge, MA.
- Russell, B., 1903, *The Principles of Mathematics*, Cambridge University Press, Cambridge.
- Schlesinger, G., 1980, *Aspects of Time*, Hackett Publishing Co., Indianapolis.
- Schlesinger, G., 1982, "How Time Flies," *Mind* **91**, pp. 501-523.
- Smart, J.J.C., 1966, "The River of Time," in Flew, A., (ed.), *Essays in Conceptual Analysis*, St. Martin's Press, New York.
- Smith, Q., 1987, "Problems with the New Tenseless Theory of Time," *Philosophical Studies* **52**, pp. 371-392.
- Smith, Q., 1987, "Sentences About Time," *Philosophical Quarterly* **37**, pp. 37-53.

Sosa, E., 1979, "The Status of Temporal Becoming: What is Happening Now?" *Journal of Philosophy* 76, pp. 26-42.

Sosa, E., 1983, "Propositions and Indexical Attitudes," in Parret, H., *On Believing*, Walter de Gruyter Verlag, pp. 316-332.