


Semantics, Tense, and Time
An Essay in the
Metaphysics of Natural Language

A photograph of a forest path. Sunlight filters through the trees, creating a warm, golden glow. The path is covered in fallen leaves, and the trees are tall and slender. The overall atmosphere is serene and natural.

Peter Ludlow

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An Essay in the Metaphysics
of Natural Language

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Preface

In one of the most infamous episodes of twentieth-century intellectual history, the linguist-anthropologist Benjamin Lee Whorf argued (i) that language shapes *thought and reality*, (ii) that the tense system of a language can tell us about the metaphysics of time entailed by that language, and (iii) that for the Hopi, among other cultures, the tense system (if it can be called that) is so radically different from ours that those cultures may not have a concept of time at all. "I find it gratuitous," writes Whorf (1956, p. 57).

to assume that a Hopi who knows only the Hopi language and only the cultural ideas of his own society has the same notions, often supposed to be intuitions, of time and space that we have, and that are generally assumed to be universal. In particular, he has no general notion or intuition of TIME as a smooth flowing continuum in which everything in the universe proceeds at an equal rate, out of future, through a present, into a past; or, in which, to reverse the picture, the observer is being carried in the stream of duration continuously away from a past and into a future The Hopi language is seen to contain no words, grammatical forms, constructions or expressions that refer directly to what we call "time," or to past, present, or future or lasting, or to motion as kinematic rather than dynamic (i.e. as a continuous translation in space and time rather than as an exhibition of dynamic effort in a certain process), or that even refer to space in such a way as to exclude that *element of extension or existence* that we call "time," and so by implication leave a residue that could be referred to as "time." Hence, the Hopi language contains no reference to "time," either explicit or implicit.

I think that Whorf was more right than wrong in the above passage. Oh, I don't mean that he was right in thinking that the Hopi are so different from us. The past few decades' work in generative grammar has shown us that the differences among human languages are superficial at best. Moreover, it is now pretty clear that even on the surface the Hopi have a temporal system not unlike our own. (See Malotki 1983 for a discussion.) Still, I think Whorf was on target on a number of points. I think he was correct in thinking that one can argue from the structure of human language to the nature of reality, and I think he was most likely correct in seeing a close connection between language and thought.

But there is another point on which I think Whorf was right in the above passage. I think that on a certain level of deep analysis his description of the Hopi tense system was basically correct—not just for the Hopi, but for all of us. That is, I think that a close study of English does not support the thesis that there is such a thing as tense—at least not the sort of tense system that is compatible with currently favored philosophical theories of time. More to the point, I doubt that *we* actually have a “general notion or intuition of TIME as a smooth flowing continuum in which everything in the universe proceeds at an equal rate, out of future, through a present, into a past.” I am also quite sure that *we* have “no words, grammatical forms, constructions or expressions that refer directly to what we call “time,” or to past, present, or future.”

These are pretty provocative claims. At least Whorf had the good sense to restrict his claims to (in our eyes) exotic peoples, thus allowing us room to concede that exotic peoples may have exotic realities. But who would suppose that *we* don't have a tense system that allows us reference to past and future, etc.? Isn't it obvious that we do?

Even if it could be shown that our tense system lacks reference to future and past events, why should we draw conclusions about time itself—about the nature of reality? Can't we simply say that there is tense, and there is time, but they don't have much to do with each other?

What I will try to show is that Whorf's unargued intuition—that there is a close connection between language and reality—is basically correct. His error was in exaggerating the differences between natural languages. Once that error is corrected, there is no reason for us to be driven to the kind of cultural relativism that followed from Whorf's original thesis. The structure of language does have metaphysical consequences, but the structure of language does not differ in relevant ways between English and Hopi, between French and Farsi, or between Chinese and Urdu. It follows that humans all share the same metaphysics—the same reality.

Thus, one of the central goals of this book is to illustrate how one can study metaphysical questions from a linguistic/semantical perspective. The specific issue that I have chosen to investigate is the well-entrenched dispute between A-theorists and B-theorists about the nature of time.

According to B-theorists, there is no genuine change; rather, there is a permanent sequence of unchanging events, ordered (lined up, if you will) by an earlier-than/later-than relation. For example, World War I (and all the sub-events contained in it) is just as real as the event of your reading this preface, which in turn is just as real as the event of the death of the sun. When we say that World War I is past, we mean that it is earlier than the event of our utterance that

World War I is past. When we say that the death of the sun is future, we mean that the death of the sun is later than our utterance that the death of the sun is future. In this sense, B-theorists consider reality to be “untensed”—events are not intrinsically past, present, or future; rather, they simply exist (out there, somewhere), and ‘past’ and ‘future’ are merely ways of talking about where those events lie relative to the utterance events in which we speak about them. This view may seem counterintuitive, but it is most likely the received view in both physics and philosophy, having been advocated (or said to have been advocated) by figures ranging from Albert Einstein to Bertrand Russell.

According to A-theorists, on the other hand, time is not a frozen sequences of unchanging events. The picture given by A-theorists varies from theorist to theorist, but I will be defending an alternative due to A. N. Prior (and perhaps to Saint Augustine before him) in which, strictly speaking, there is no future and no past “out there” or anywhere. We can say that it will be true that a certain state of affairs (say, the death of the sun) will hold and that it was true that a certain state of affairs (say, World War I) held, but that this does not involve our referring to future and past events or to there being such events for us to refer to. According to this idea (often called *presentism*), what makes something future or past is how the world stands right now.

The alleged problems with each of these two positions are now fairly well mapped out. The chief problem with the B-theory is that it fails to account for the indexical nature of our temporal discourse. As an illustration, suppose that I know I have an important appointment at 2 o’clock, but that because my watch has stopped I do not know that it is now 2 o’clock. I blissfully think out loud: “I have an appointment at 2 o’clock.” Suddenly, the radio announces that it is 2 o’clock. I now think out loud: “Oh no, I have an appointment *now!*” The alleged problem for the B-theorist is that there is no way to distinguish the content of these thoughts/utterances with B-theory semantical relations. As far as the B-theory is concerned, ‘now’ just means the same as ‘the time of this utterance’, which is just to say ‘2 o’clock’. Something has gone wrong.

The response strategies of the B-theorists are limited to two general routes. First, one can say that semantics doesn’t have anything to do with metaphysics, so we can allow indexicality in the semantics without it infecting our metaphysics. Second, one can say that the two sentences in my example of the 2 o’clock meeting, despite appearances, actually have the same semantics, or at least the same semantic “content.” The extra “meaning” supplied in the sentence with the indexical is not really semantical; however, it may be psychological, and psychology does not have the same metaphysical commitments that semantics does. In this book I will argue that both of these strategies fail—that semantics cannot be

divorced from metaphysics, and indexicality cannot be divorced from semantics. My conclusion will be that a B-theory metaphysics is inherently defective.

On the other side, there are two central objections to the A-theory: first, that it allegedly falls victim to a logical paradox observed by J. M. E. McTaggart, and, second, that it can't be integrated within a semantics of tense because it cannot account for temporal anaphora (expressions, such as 'then', that apparently refer to times in the past and future) and therefore it also can't account for complex tenses (e.g., the past perfect). I will argue that the objections related to temporal anaphora and McTaggart's objections turn out to be related, and that a theory of temporal anaphora can be incorporated into a semantics of tense that does not have future and past events. The idea will be to develop a theory of "E-type temporal anaphora" in which temporal anaphors are not referring expressions but rather stand proxy for temporal conjunctions—e.g., when-clauses (which can then be treated in a nonreferential way). My conclusion will be that there are no compelling semantical objections to the A-theory.

My case for the A-theory will not end there. If there is a fact of the matter as to what semantical theory a language user is exploiting (and how the language user is representing that knowledge), and if language users actually have (tacit) knowledge of their semantical theory (and of how they are representing it), then there may be psycholinguistic probes that can help us determine whether the speaker is using an A-theory semantics or a B-theory semantics. As we will see, evidence from language acquisition and from acquired linguistic deficits supports the idea that the structure of our semantical knowledge is consistent only with the A-theory picture.

The main theses of this book are, then, the following:

- We can gain insight into the metaphysics of time by studying the semantics of natural language, where this constitutes (in part) our knowledge of language-world relations and how we represent that knowledge.
- The B-theorist cannot account for the semantics of temporal indexicals; hence, the possibility of a B-theory metaphysics is undermined.
- The A-theorist *can* answer semantical objections about temporal anaphora and metaphysical objections about the McTaggart paradox.
- Psycholinguistic evidence about the semantical theory that humans actually employ also favors the A-theory semantics and hence favors A-theory metaphysics.

Defending some of these theses will obviously require that we do some technical work, both on the philosophical end and on the linguistic end. This need to go into technical matters has presented me with a dilemma. Philosophers will puzzle over the need for formal fragments and will find the empirical discussion

of grammatical tense and anaphora to be mind-numbingly detailed. Linguists will puzzle over all the attention given to the McTaggart argument and truth-value links, and will find the empirical discussion of tense phenomena and anaphora surprisingly condensed. There is no helping this, I'm afraid. I have tried to give the minimum level of detail necessary to secure my argument, and I have relied heavily on notes to point the way to further discussion of many crucial issues. Readers interested in digging deeper will have to pursue the references. My goals here are simply to lay out the form of the argument and to give enough detail to show how the pieces hang together.

As I have already hinted, my central concern in this project is not with the A-theory and the B-theory, or even with the philosophy of time. Rather, my goal in this exercise is to illustrate an approach to metaphysics in which semantical theory and the philosophy of language are central. Fifty years ago perhaps no one would have bothered making this final point, since analytic philosophers then took it for granted that language (and the philosophy of language) would stand at the center of any philosophical endeavor. In subsequent decades the philosophy of language was removed from this central position, sometimes to be replaced by the philosophy of mind and sometimes to be replaced by nothing at all (leaving the various sub-branches of analytic philosophy to spin off in numerous unrelated directions).

It is not all bad that the philosophy of language lost its place at the center of analytic philosophy. The view of language that guided most of the mid-century research was, in my view, fundamentally mistaken. Further, many of the supposed consequences which were to flow from the philosophy of language were tenuous at best. Today, if the philosophy of language has some claim to make in metaphysics or elsewhere, it must be carefully argued, and that is all to the good.

Yet, as the century draws to a close the philosophy of language has returned in a new form. It has been successfully naturalized, in my view, and integrated into the semantics of natural language and linguistic theory. (For a survey of relevant literature and a gloss on this naturalization project, see Ludlow 1997a.) Returning in this form, the philosophy of language *does* have powerful claims to make about our various philosophical endeavors, not just in the metaphysics of time, but also in the theory of causality, in the theory of action, and in value theory. I hope that this book will serve to illustrate just how central the philosophy of language is, and how, executed correctly, the philosophy of language deserves to reclaim its place at the very heart of analytic philosophy.

Acknowledgements

When I conceived of this project, in 1991, the idea was to put together a short manuscript that would develop two different theories of tense within an absolute semantics for natural language and would show the connection between those theories and two leading theories of time. In 1992 I circulated a short draft manuscript that contained the core of the idea (although not worked out in detail). That draft received a number of helpful comments from Barry Schein, Ed Zalta, and Richard Larson, which led to some significant revisions.

In the fall of 1993 the revised material was presented at a series of lectures at the University of Padua, and it benefited greatly from the criticisms and comments of some of the participants (including Paolo Leonardi, Mario Mignuce, and Ernesto Napoli). These lectures (and the discussion periods) led to the first 1994 draft, which I again circulated narrowly. Again I was fortunate to have important feedback from Richard Larson and Barry Schein, and in particular from Ernie Lepore. Incorporating those comments, I revised the manuscript again. Late in 1994 I submitted it to The MIT Press. Although I received helpful comments from two anonymous reviewers, and although the project was "green lighted," it was clear to me that a lot of technical problems remained to be worked out.

Subsequent revisions of this material, particularly the development of the technical details, were presented in a course on the semantics of tense which I taught at in the Diploma Program in Philosophy of Language and Linguistics at the University of Venice in the summer of 1995, and at a seminar on tense which I taught in the Department of Linguistics at Stony Brook in 1996. The less technical portions of this material were presented in mini-courses that I taught at the University of Novi Sad, Yugoslavia in 1997 and at the Fourth Central European Summer School in Generative Linguistics, in Olomouc, the Czech Republic, 1997.

Portions of chapters 5–10 were presented in talks at the Department of Philosophy at the University of Maryland (1995), at the Department of Linguistics, Humboldt University in Berlin (1995), at the Inter-University Center Conference on Truth in Bled, Slovenia (1996), at the Conference on the Question of Temporality at the University of Venice (1996), and at the Moral Sciences Club at Cambridge University (1997).

The penultimate draft, completed in late 1997, was again circulated for comments. Once again, invaluable assistance and encouragement came from Richard Larson and Ernie Lepore, as well as from Lori Repetti, Gabe Segal, and Jason Stanley. Crucially, Larson and Repetti both convinced me that, while I had perhaps ironed out the theory to my satisfaction, the exposition was utterly opaque. I accordingly spent the next six months trying to streamline the manuscript, remove technical details, and in general make the book more user friendly. To this end, in the spring of 1998 I used several venues to experiment with ways of presenting the material: the University of Milan, the Scuola Normale Superiore in Pisa, and a workshop on tense sponsored by UCLA's Department of Linguistics.

The last year and a half of work on this book was done in some idyllic settings. In the spring of 1997 I was a visiting scholar at Cambridge University, where apart from the MSC talk, I benefited greatly from discussing these issues with Hugh Mellor, Jeremy Butterfield, Isaac Levi (who was also visiting), and Michael Potter. (I might add that the office I was provided at Cambridge was furnished with portraits of J. M. E. McTaggart, C. D. Broad, and G. E. Moore—quite inspirational for someone working on the reality of time.) In the fall, work continued at the University of Venice, where I held the Fulbright Chair in Philosophy of Language/Linguistics. I am indebted to Anna Cardinaletti, Michal Starke, and Guglielmo Cinque for logistical and intellectual support while in Venice. I am also indebted to my department chair, Ed Casey, and to the administration at SUNY Stony Brook for supporting my leaves of absence during this period.

Certain individuals deserve thanks for contributions that are somewhat more existential in nature. Lori Repetti and our daughter Chiara deserve some sort of award for tolerating me while I worked on this. Fortunately for Chiara, she was not around during the first four years of this effort. I should add that Lori provided not only existential support but also some crucial additions and corrections—particularly in the sections on the nature of *I*-language and in the section on eliminating grammatical tense. A different sort of existential contribution came from Noam Chomsky and Richard Larson, who (apart from providing me with comments on portions of the manuscript) taught me to be courageous in my thinking, and more importantly, by their examples, taught

me how to have the kind of mental strength necessary to grind out the arguments required of a minority intellectual position. I now realize, however, that the foundation of what I learned from them I had already learned from my father. It was he who taught me about having at least one new idea every day, and how to stay with each new idea, sometimes for years, reworking it until it came to fruition. He also taught me that, even after all this work, one has to expect a high rate of failure among radical ideas. As this project is way out on several philosophical limbs and could, even tomorrow, crash in a most spectacular way, the only person I can imagine dedicating this book to is my father. If the project in this book succeeds, no one else is more deserving of having it dedicated to them. If the project fails . . . well, as my father would say, "it's all in a day's work."

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Introduction

The A-Series vs. the B-Series

Metaphysics is, in part, the study of what is real. The layperson often supposes that when philosophers worry about what is real they must worry about whether tables, chairs, and dinner plates are real. Some philosophers do worry about these questions, but there are a number of other metaphysical issues that philosophers worry about too.

Among the areas of interest is a class of metaphysical questions surrounding the nature of time. For example, is time real? If so, is the future as real as the past? Can we change the future? If yes, why? If not, why not? If time is real, then what exactly is it? Is time, as some have suggested, really just physical change? If so, then how do we make sense of this change apart from its occurring in time? But if change takes place in time, then how can time be change? As with other metaphysical questions, questions about the nature of time are notoriously difficult. Certain problems posed by the pre-Socratic philosophers are still debated, and the number of metaphysical puzzles surrounding the nature of time continues to multiply.

This work will focus on just one of the many issues in the philosophy of time. The issue, which in some form was discussed as far back as the third century (by the Neoplatonist Iamblichus¹), has been at the center of the twentieth-century discussion of the philosophy of time. Briefly, the problem is as follows: Two broad approaches to the philosophy of time can be distinguished. According to one approach, adopted by Russell, Einstein, Reichenbach, and others, time is simply a sequence of unchanging and tenseless events. Future events, past events, and present events are all equally real. McTaggart (1908) called this the *B-series* conception of time; others, including Mellor (1981), have called it the *untensed* conception. According to the *alternative* approach, it is fundamental

to the notion of time that events, or perhaps propositions, have genuine temporal status. So, for example, there is a fundamental metaphysical distinction between events that are future and those that are present or past. This fundamental difference is supposedly deeper than a simple ordering of events by the earlier-than/later-than relation. McTaggart referred to this as the *A-series* conception of time; others have characterized it as the *tensed* conception.

Following Gale (1967), we might find it useful to distinguish the A-series and the B-series according to the following criteria.

A-series	B-Series
The B-series is reducible to the A series.	The A-series is reducible to the B series.
Temporal becoming is intrinsic to all events.	Temporal becoming is psychological.
There are important ontological differences between past and future.	The B-series is objective. All events are equally real.
Change is analyzable solely in terms of A-series relations (past, present, future).	Change is analyzable solely in terms of B-series relations (earlier-than, later-than).

As we will see, these criteria do not provide necessary and sufficient conditions for identifying the A-series and the B-series; indeed, some of the criteria will have to be relaxed if logical conundrums are to be averted. For now, however, they can provide us with a useful way of thinking about the distinction. But what exactly is at stake in this distinction?

Questions like these have been pursued throughout the history of philosophy, not just because of their intrinsic interest but also because metaphysics has often been seen as a point of departure for other philosophical investigations. Questions about the metaphysics of time have been thought to have consequences for the philosophy of language, the philosophy of mind, the philosophy of religion, the philosophy of science, epistemology, and other branches of philosophy.

As we will see in chapter 10, the decision between the A-theory and the B-theory is rich in consequences. But how does one decide between alternatives like these? One answer would be that questions about the nature of time are best addressed by physicists. For example, Einstein held a B-series conception of time.² He presumably had good physical reasons for doing so. Shouldn't we therefore defer to Einstein, or to whatever current physical theory dictates? Putnam (1967, p. 247) appears to adopt such a view: