

The Structure of Time

Language, meaning and temporal cognition

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For Angela

Time spent with you is my most precious possession

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Volume 12

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by Vyvyan Evans

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PART I

Orientation

CHAPTER 1

The problem of time

Of all the scientific intangibles that shape our lives, time is arguably the most elusive – and the most powerful. As formless as space and being, those other unseen realms of abstraction on which we are helplessly dependent, it nonetheless affects all material things. . . Without it we could barely measure change, for most things that change on this Earth and in the universe happen in time and are governed by it. Stealthy, imperceptible, time makes its presence known by transforming our sense of it into sensation. For though we cannot see, touch, or hear time, we observe the regularity of what appears to be its passage in our seasons, in the orchestrated shift from dawn to dusk to dark, and in the aging of our bodies. We feel its pulsing beat in our hearts and hear its silence released in the precise ticking of a clock. (Langone 2000:7)

Time adds an important and necessary dimension to our understanding of the world and our place in it – it seems almost impossible to conceive of what our world of experience might be like in the absence of time; after all, events happen *in* time. This has resulted in physicists treating time, along with space, as a theoretical and an empirical primitive (Akhundov 1986; Coveney & Highfield 1990; Davies 1995; Einstein 1961, [1916] 1950; Sklar 1974). The view that time constitutes, at some level, part of the physical fabric of the cosmos, and as such is physically real, accords with what I will term the COMMON-PLACE VIEW of time. According to Langone (2000), most people believe in this view of time, a ‘true’ time, a time that actually exists in a physical sense; on this account, time is objectively embedded in the external world, as reflected in the physical laws which govern the environment we inhabit. While time may itself be “imperceptible”, it is nonetheless real, manifesting tangible consequences. Without time’s “passage” there could be no succession and thus no experience of duration, as noted in the quotation above.

Not only does the common-place view of time accord with modern physics, it also resonates with mythological views of time. A number of scholars have observed that in ancient mythologies, for instance in the Persian, Greek and Indian traditions, time was deemed to be one of the foundational principles of the cosmos (see Coveney & Highfield 1990; Lipincott et al. 1999;

Whitrow 1988). In the Platonic dialogue *Timaeus*, Plato presents a speculative cosmology, based on earlier Greek mythology, in which he describes time as the “moving image of eternity”. On this account, time reflects physical attributes of the cosmos, namely the celestial spheres which are eternal in nature. This view is in some respects apparent in both classical physics (e.g., Newton’s view of ‘absolute time’ in his *Principia Mathematica*), and in post-Einsteinian physics. In Einstein’s ([1916] 1961) theory of general relativity time is seen as constituting part of the physical makeup of the cosmos, embedded with space in a physical spacetime manifold.

Yet, in the quotation above we see the tension apparent when we confront the nature of time. On the one hand, we have the common-place view and the view of modern physics which has built a theoretical edifice on the foundational axiom of the reality of time. Yet, on the other hand, time is “elusive”, “intangible”, “stealthy” and “imperceptible”. Moreover, if time were in some sense objectively real, we might expect to be able to actually perceive it. However, there does not appear to be neurological apparatus which enables us to perceive global time (Lakoff & Johnson 1999). This has led a range of scholars to suggest that time may not be objectively real in the literal sense imagined by the common-place view. Indeed, while we intuitively experience time, beyond the physical periodicities (e.g., the daily passage of the sun across the sky, or the oscillation of quartz crystals in a digital watch) we harness in order to represent time, there appears to be nothing tangible in the world which can actually be pointed to and identified as time. This tension gives rise to the metaphysical problems which have been associated with time by philosophers, scientists and other scholars in the western tradition since pre-Socratic times.

1.1 The metaphysical problem and the linguistic problem

This book is primarily concerned with addressing what I will call THE METAPHYSICAL PROBLEM OF TIME. This can be stated as follows: if we are aware of time, and yet cannot be said to actually perceive it without, for instance, “the precise ticking of clocks”, which serves to measure its “silence”, what is the nature and status of time? Is time a primitive, an attribute of the physical cosmos, as suggested by modern physics, or is time dependent on the relations between events such as our experience of motion events, and hence not primarily an attribute of the world, but a consequence of it, an abstraction derived from comparing events, as suggested by, for instance, Lakoff and Johnson (1999), and by the psychologist James Gibson (1975, 1986)? Or is time neither

a physical attribute of the world, nor a relation between external events, but rather something internal in nature? That is, is our awareness of time primarily phenomenological, deriving from internal cognitive and other perceptual processes, as suggested by phenomenologists such as Husserl ([1887] 1999) and Bergson ([1922] 1999)?

There is a second tension apparent in the quotation with which we began. While time seems to be fundamental to our understanding of other events (including motion), we ordinarily think and talk about time not in time's own terms, whatever these may be, but rather in precisely those terms which derive from the events, which according to modern physics, time structures – after all we talk about the 'passage' or the 'flow' of time and about being 'located in' time. In so doing we spatialise time. This represents **THE LINGUISTIC PROBLEM OF TIME**: why do we use language pertaining to motion through three-dimensional space and locations in three-dimensional space in order to think and talk about time? Is there something which is literally temporal beyond the language of motion and space we employ to describe it?

The ultimate goal of this book is to establish the nature and structure of time, in essence to resolve the metaphysical problem. One important way in which I will address the metaphysical difficulties associated with time will be by tackling the linguistic problem. In this book I will suggest that the manner in which temporal concepts are **ELABORATED**, which is to say structured by conceptual content from other (i.e., non-temporal) domains, provides important insights into the nature and structure of time. I will argue that this elaboration can be effectively studied via an examination of the linguistic problem. As language reflects conceptual structure in important ways, it accordingly represents a crucial window into the human conceptual system. By examining the way in which language lexicalises time, we will gain important insights into the conceptualisation of time and the nature and organisation of time.

However, as we will see, how we model time at the conceptual level does not tell the whole story, if we are to uncover the nature and structure of time. Phenomenological experience and the nature of the external sensory world to which subjective experience constitutes a response, give rise to our pre-conceptual experience of time, and so contribute to our conceptualisation of time in important, complex, and subtle ways. As we will see, a metaphysics for time cannot be solely physicalist, or cognitivist or phenomenologist. Time is not a unitary phenomenon restricted to a particular layer of experience. Rather, it constitutes a complex range of phenomena and processes which relate to different levels and kinds of experience. A balanced view is one which takes seri-

ously this complexity and adopts a suitably responsible approach to the study of TEMPORAL COGNITION.

1.2 Temporal cognition

This book deals with temporal cognition. I am assuming a suitably broad definition of COGNITION which covers all aspects of conscious and unconscious mental function. Temporal cognition is that aspect which concerns the mental function responsible for temporal (and temporally-framed) experience (such as, for instance, perceptual processing – see Chapter 2) at the pre-conceptual level (prior to re-presentation in conceptual structure), as well as the organisation and structuring of temporal concepts (= re-presentations) at the conceptual level, i.e., within the CONCEPTUAL SYSTEM. The conceptual system, as I will understand it, is that attribute of mind which organises and stores information which has achieved REPRESENTATIONAL STATUS. Information which has achieved representational status can be recalled, modelled, employed for purposes of reasoning, projection, abstraction, etc. (see Barsalou, in press). Hence, the content of the conceptual system is available to symbolic processes such as language, which pairs a physical symbol (e.g., a sound) with a meaning element which I term a CONCEPT – language then symbolises information to which we have conscious access. That subset of concepts which are paired with linguistic symbols (e.g., words), I refer to as LEXICAL CONCEPTS.

From this two claims follow. First, to study linguistic meaning constitutes a study of the conceptual system (albeit in a form conventionalised for expression via language). Second, as lexical concepts represent only a subset of the range of concepts which inhere in the conceptual system, the linguistic-semantic system cannot be equated with the conceptual system (Brisard 1999; Heine 1997). Nonetheless, the view that the meanings paired with linguistic symbols are (a particular ‘species’ of concepts) entails that the study of linguistic semantics offers a direct way of investigating the human conceptual system.

I will argue that the nature of the metaphysical and linguistic problems derives, in essence, from a bifurcation in the conceptual system. That is, there is a fundamental distinction in the nature of concepts (Grady 1997a; Langacker 1987; Tyler & Evans 2001a). It is this bifurcation – between concepts of subjective origin as opposed to concepts of sensorimotor, i.e., external origin – that results in the nature of time appearing to be so paradoxical and mysterious. Once the distinction in concepts has been properly understood, it will become clear that temporality is a phenomenon which while ultimately inter-

nal in nature, constitutes a response to the external world of sensory experience to which we have adapted as a species, and to which we continue to adapt over the course of a lifetime.

Consequently, my central thesis is that time is not ultimately an empirical primitive, in the sense of being a physical feature of an objective world, as in modern physics; nor is time at base a mental achievement, an abstraction derived from the relations holding between external events in a tradition going back to the philosophy of Leibniz (Turetzky 1998). Rather, I will argue in detail that temporality is fundamentally internal and hence phenomenological in origin.¹

However, this is not to say that time does not reach its apotheosis in the cultural models we construct in order to co-ordinate everyday life by virtue of this ultimately subjective temporal experience. Indeed, much of this book will be concerned with such models. Nor does this conclusion serve to undermine the importance of sensory experience as a set of phenomena necessitating temporal awareness, and as a means of providing structure for cognitive models of time.

Based on the analyses to be presented, it will be possible in the final chapter to advance a metaphysics of time, in which the internal provenance of time, as well as its nature and organisation, are adduced. This metaphysics will take account of our cognitive model(s) for time evidenced via language, their subjective or phenomenological provenance, and their relation to our external world of sensorimotor experience.

1.3 Why should we be interested in investigating time?

One of the most intriguing issues which confronts a theory of conceptual structure concerns the nature of temporal representation. As time has often been held to be the example of a so-called 'abstract' concept par excellence, an investigation of how time is represented in the human conceptual system gives rise to a number of problems of central concern for the cognitive sciences. If concepts derive from the redescription of perceptual input, as suggested by the developmental psychologist Jean Mandler (1992, 1996), then what is the input which gives rise to conceptions of time? This question gives rise to the metaphysical problem discussed above. Time is one of the most mysterious and baffling of entities. While we 'feel' its 'passage' we cannot actually observe the 'flow' of time without the physical experience of succession and change which time appears to bring about. What then is the nature and status of the experience which provides the input for perceptual redescription? A further diffi-

culty is that although we intuitively apprehend the concept of time, it's not at all clear how time is represented at the conceptual level. While I will examine linguistic evidence, and take this as representing, in some form, conventionalised conceptual content, it remains unclear how far such patterns of concept elaboration can be taken as evidence for conceptual structure. Moreover, while there is evidence from a number of modalities, including language, that at the conceptual level time is organised in terms of corporeal spatio-physical experience, this still fails to explain what is temporal beyond the spatial structure, and indeed, why temporal concepts should be elaborated in this way.

As work in the cognitive sciences progresses, it is increasingly becoming clear that human cognition is a highly complex phenomenon. The world we perceive to be out there is as much a product of cognition in a human body as it is the result of an external reality (Lakoff 1987; Torey 1999; Tyler & Evans 2003; Varela, Thompson & Rosch 1991). Hence, our world-view as human beings is exactly that, a view from one possible ecologically viable perspective among many possible perspectives (Varela et al. 1991). The world we have conscious access to is itself a product of embodied cognition, and moreover, this consciously accessible portion only constitutes one small aspect of the cognitive product (Dennett 1991; Edelman 1992; Jackendoff 1983, 1990, 1992). A study of time, or more properly temporal cognition (in the sense defined), allows us to begin to glimpse beyond the constraints imposed upon any investigation by consciousness. We are therefore able to reject the view that concepts such as time are difficult to define in their own terms because they are intellectual constructs; as we will see, they are difficult to define because they form part of the bedrock of our cognitive architecture. We are therefore also able to reject the view that time must be at some level an artefact of the world. A study of temporal cognition is important because it reveals the hidden depths of the human mind and how dependent our perceived world is on the nature and organisation of the cognition which happened to evolve in a human body.

1.4 Introduction to the rest of the book

The central proposal of this book is that time does in fact constitute a phenomenologically real, internally-derived experience. Drawing on findings in social and cognitive psychology, in neuroscience and utilising the perspective and methodology of cognitive linguistics, I argue that our experience of time cannot be equated with an objectively real entity inhering in the world 'out there'. Nor can it be equated with a second-order concept parasitic on 'more

basic' kinds of experiences, such as external sensory experience. Rather, I argue that time appears ultimately to derive from perceptual processes, which in fact may enable us to perceive events. As such, temporal experience may be a pre-requisite for abilities such as event perception and comparison, rather than being an abstraction based on such phenomena.

The investigation proceeds by tackling the linguistic problem of time. As linguistic structure, and particularly patterns of elaboration, reflect conceptual organisation conventionalised into a format encodable in language, the study presented here serves to investigate the human conceptual system for time. Such a study will reveal how we conceptualise and so structure our concepts for time. As conceptualisation must reflect, to a certain extent at least, the nature of (pre-conceptual) subjective experience (although see Dennett 1991), an investigation of time at the conceptual level provides a means of investigating the nature of temporal experience and so tackling the metaphysical problem. Hence, the book presents an examination of the nature of temporal cognition with two distinct foci: (i) an investigation into (pre-conceptual) temporal experience and (ii) an analysis of temporal structure at the conceptual level (which derives from temporal experience).

The book is divided into three parts. Part I is orientational in nature. In the next chapter I begin with a discussion of the linguistic problem: the fact that temporal concepts are conceptualised and lexicalised in terms of semantic content from the domain of motion and three-dimensional space. I review and reject the position that this constitutes evidence for concluding that temporal concepts are abstract in the sense of 'mental achievements', 'constructed' from 'more concrete' kinds of experiences and concepts, notably the comparison between events. Evidence is reviewed from neuroscience, psychology and linguistics which suggests that time may ultimately derive from fundamentally subjective experience, possibly deriving from perceptual processing, which relates to antecedent pre-conceptual experiences.

While time is of internal provenance, the linguistic evidence nevertheless indicates that it is structured at the conceptual level in terms of content which relates ultimately to sensory domains which are not primarily (or at least not wholly) temporal in nature. Accordingly, Chapter 3 considers why time should be elaborated at the conceptual level in non-temporal terms.

Chapter 4 presents a survey of the theoretical assumptions which inform and underpin the methodology and analyses to be presented in later chapters. Specifically, this chapter provides an experientialist account of the nature of meaning, relating linguistic semantics to the nature of conceptualisation and embodied experience. It argues that human embodied experience is itself an