Part I

Orientation

This part of the book provides an orientation to the research questions, perspective and theoretical approach undertaken. It consists of two chapters. The first of these provides an introduction to the nature of temporal reference and considers, in broad terms, the research foci of the book. In so doing it sets the scene for the study of temporal reference and meaning construction in the remainder of the book. The second chapter is concerned with introducing the theoretical and methodological perspective that guides the study of time presented here.

1 Introduction

> Transience is the force of time that makes a ghost of every experience.
> John O'Donohue, *Anam Cara: A Book of Celtic Wisdom*

This book is concerned with *temporal frames of reference*: the means that humans have available to them in order to fix events in time. In broad terms I am concerned with two aspects of temporal reference. First, I seek to uncover the cognitive representations for temporal frames of reference (hereafter t-FoRs). Linguistic evidence provides the primary tool I deploy for delving into the nature of temporal representation. And second, I am concerned with meaning construction. I examine the way in which situated interpretations arise in linguistic expressions relating to temporal reference. To achieve this, we must of necessity grapple with two intertwined issues. First off, time often appears to be supported by spatial knowledge. Does this then mean that time is somehow not real, but a mental construct, parasitic on, in some sense, space as a more 'basic' type of experience? I argue that the neurological and behavioural evidence does not support such a view. That said, space does appear to be necessary for the representation of time in both language and thought. I explore the reasons for this. The second issue concerns the precise nature of the role of *conceptual metaphor* in meaning construction (in the domain of time). The consequence of these two broad concerns is the following: in this book I address the nature of the linguistic resources humans deploy in order to signal temporal reference. This in turn sheds light, I will argue, on the non-linguistic resources – both conceptual and neurological – that language relies upon in establishing temporal reference and in constructing meaning in the domain of time.

The book has three distinct aims. First, it represents a detailed application of the *Theory of Lexical Concepts and Cognitive Models*, or LCCM Theory for short. This I developed in an earlier book (Evans 2009b). LCCM Theory provides an account of two fundamental aspects of language and its relation to the conceptual system: lexical representation and meaning construction. In an important sense, this book provides a detailed application of LCCM Theory, taking temporal reference as its object of enquiry. Accordingly, it presents a case study in the nature of the lexical representation of temporal

reference and the way in which linguistically mediated meaning is achieved in this domain.

Second, the book focuses on the domain of time. I have chosen time for this study as it is one of the most, if not the most, challenging domain of enquiry in terms of understanding the relation between language, perceptual experience, conceptual representation and meaning. Part of the complexity comes from the fact that time appears, in some ways, to be structured in terms of aspects of spatial experience. And yet time is quite unlike space. Time exhibits the phenomenon of *transience*, as intimated by the quotation above, and as discussed in more detail in Chapter 3. And in contrast to time, space doesn't. Indeed, in the chapters that follow I argue that temporal and spatial reference are distinct and distinguishable for precisely this reason. Important questions that need to be resolved relate to the nature and status of space in temporal representation, language and thought. These are questions that I also address.

Third, in this book, I am concerned with the role of metaphor in temporal language and in meaning construction more generally. I argue that it is overly simplistic to assume that conceptual metaphor is the driving force for much of meaning construction, as has sometimes been proposed by some prominent cognitive linguists. Conceptual metaphor has a role in structuring the conceptual system. But language provides a semiotic system in its own right, and temporal reference is a system that, in terms of its provenance, does not derive from space, as I shall argue in detail. Time as a domain of experience is, in principle, distinct from spatial experience; it can, for instance, be traced to independent neurological structures, as I make clear later in the book.

1 Previous approaches to temporal reference

Research on temporal reference has traditionally focused on the ascription of motion to time, thereby facilitating different perspective points. Since Clark (1973), the phenomenon of *deictic reference* has been recognised with the so-called Moving Time (MT) and Moving Ego (ME) perspective points. In the examples in (1), temporal reference arises from the ascription of motion to temporal events with respect to a stationary ego – as in (1a) – or from the ascription of motion to the ego which moves towards a temporal event, conceived as a static location – as in (1b).

(1) a. Christmas is approaching (us) [Moving Time]
b. We are approaching Christmas [Moving Ego]

Since Moore (2000, 2006; see also Núñez and Sweetser 2006), a further distinction has been recognised, that of *sequential reference* in the domain of time. Building on insights by Traugott (1978), Moore argued that the ascription of motion to events conceived as a sequence provides an alternative, and

a complementary, means of facilitating temporal reference. Importantly, while deictic reference encodes a future/past relationship, sequential reference facilitates an earlier/later relationship (see also Evans 2004a):

(2) Christmas comes before New Year's Eve

In the example in (2), Christmas is fixed in time with respect, not to an ego, but to a later event, namely New Year's Eve.

In addition to deictic and sequential reference, Kranjec (2006) has suggested that a third type of temporal reference may also exist. He dubs this *extrinsic reference*, and it also makes use of the ascription of motion to time. In this reference strategy, motion provides an extrinsic field which serves to fix an event, or events, in time. In this type of reference strategy, time is conceived as a matrix, or manifold (Evans 2004a), which constitutes *the* event within which all other events occur. This way of conceiving of time allows the human experiencer to fix events by virtue of 'where' in time they occur, and is evidenced by motion ascriptions such as the following:

(3) Time flows on (forever)

In addition to the linguistic evidence, there is compelling behavioural evidence which supports the view that the three temporal reference strategies have psychological reality. In a classic experiment, McGlone and Harding (1998) developed a paradigm involving an ambiguous temporal task. In so doing, they established the psychological reality of the deictic temporal perspective. This finding has since been substantiated in related experimental work using spatial cues by Boroditsky (2000) and Gentner *et al.* (2002), amongst others. Adapting the McGlone and Harding paradigm, Núñez and colleagues (2006) provided behavioural evidence for the psychological reality of sequential reference. And Kranjec (2006) has provided behavioural evidence to suggest the psychological reality of extrinsic temporal reference.

Given the putative existence of three types of temporal reference strategy, the question that arises is how best to account for these. More specifically, what exactly is the nature of each type of reference strategy? How do they differ? What are their neurological and experiential antecedents, if any? And do they have linguistic reflexes? These are questions I address in detail in Part II of the book.

An important research tradition in cognitive science is Conceptual Metaphor Theory (Lakoff and Johnson 1980, 1999). This approach has demonstrated that time is supported, in part, in terms of our experience of and representations for (motion through) space. Lakoff (1993), for instance, argues that the different perspective points associated with deictic reference in the domain of time are due to a general conceptual metaphor: TIME PASSING IS MOTION THROUGH SPACE. In other words, time is structured, at least in part, in terms of spatial

representations grounded ultimately by sensory-motor experience (Lakoff and Johnson 1999).

The findings from Conceptual Metaphor Theory have contributed, in part, to an approach to temporal reference which seeks to apply *frames of reference* (FoRs) from the domain of space to observable temporal reference strategies. The hypothesis is that if time is partly structured in terms of space, then temporal reference should make use of and hence pattern after spatial reference (Bender *et al.* 2005, 2010; Kranjec 2006). In particular, two recent treatments have developed detailed taxonomies of temporal reference that, in slightly different ways, apply the framework of spatial reference to understand temporal reference. These accounts (Bender *et al.* 2010 and Tenbrink 2011), which I review in Chapter 3, provide extremely insightful applications of the spatial reference to the domain of time, and in so doing build on and extend Levinson's (2003) seminal treatment of FoRs in the domain of space.

That said, in addition, temporal reference invokes the notion of transience: a phenomenologically real experience type that has not hitherto been fully recognised (although see Galton 2011). While not denying that space often does support temporal reasoning, my central thesis is that time is not quite like space. While time shares some – although only some – abstract parameters with space, especially that of quantifiability, for which I will use the term *magnitude*, the two domains are different in large measure. While an application of *spatial frames of reference* (hereafter s-FoRs) to time is doubtless insightful, I argue that such an application does not fully resolve the inalienable nature of temporal reference. In Chapter 3 I make the case for the often divergent nature of spatial and temporal reference. Once this has been done, I develop a taxonomy of deictic, sequential and extrinsic t-FoRs. Temporal reference, I claim, is grounded in the phenomenon of transience, the hallmark of temporal reference (Galton 2011). Moreover, transience manifests itself in three distinct ways, giving rise to distinct *temporal relations*. I argue that the function of a t-FoR is to give rise to a temporal relation, and hence it may not be best studied by focusing exclusively on the way temporal reference patterns after *spatial relations*. This follows, I will argue, as transience is precisely that facet of temporal experience which is absent from spatial experience.

2 Temporal frames of reference

A t-FoR, I shall argue, can be encoded by a conventional argument-structure construction – which is to say a sentence-level construction. Such argument-structure constructions can be lexically filled in a delimited range of ways. To illustrate, consider the following examples from English:

(4) We are getting close to Christmas
(5) The microchip came after the transistor

In the example in (4), the event of Christmas is being fixed with respect to the egocentric experience of now. In contrast, in (5) the advent of the microchip is being fixed relative to the appearance of the transistor (Evans 2009b; Moore 2006, 2011; see also Núñez and Sweetser 2006). In his work, Kevin Moore has insightfully argued that the temporal reference point (RP) in examples such as these is distinct. The example in (4) locates Christmas with respect to an Ego-RP, encoded by the expression *we*. This ego-based RP encodes a future/past relation: in (4) Christmas is located in the future with respect to the egocentric perspective encoded by *we*. In (5) the advent of the microchip is located with respect to another event, and hence an Event-RP. The example in (5) thereby encodes an earlier/later – rather than future/past – relation. That is, two events are being sequenced with respect to one another: the emergence of the microchip came later than the invention of the transistor.

My theoretical starting point for the linguistic analysis presented in Part II of this book is the following claim: language is made up of learned associations between form and meaning (Croft 2001; Goldberg 1995, 2006; Langacker 1987, 2008; see also Evans and Green 2006). These form–meaning pairings are often referred to as *constructions*.[1] In other words, the sentences in (4) and (5) are licensed by underlying t-FoR constructions – conventional units of linguistic knowledge that allow us to formulate temporal expressions with respect to different RPs and hence provide different temporal perspectives and even different types of temporal relations.

Argument-structure constructions, the type of construction I shall be analysing in this book, provide a given language with structure at the level of clauses and sentences. As argument-structure constructions possess meaning independent of the individual words that are integrated within the construction, any given sentence, in any given language, arises on the basis of these constructional templates. Put slightly differently, constructions provide the sentence with schematic meaning independently of the words that fill it.

In classic work, Goldberg (1995) has shown that, for instance, the ditransitive construction carries a distinct semantic representation – one that is independent of the individual words that serve to substantiate it. By way of example, consider the sentence in (6). This, she argues, is motivated by the ditransitive construction in (7), consisting of a form, which I refer to as the *vehicle* (7a), and a meaning, which I refer to as a *lexical concept* (7b):

[1] See, in particular, Goldberg's Cognitive Construction Grammar (1995, 2006), and Croft's Radical Construction Grammar (2001). Langacker (1987, 2008) deploys the term *symbolic unit* to refer to the same phenomenon.

(6) John baked Mary the cake

(7) a. Vehicle: NP1 VP NP2 NP3
b. Lexical concept: [ENTITY X CAUSES ENTITY Y TO RECEIVE ENTITY Z]

A lexical concept constitutes the semantic and pragmatic knowledge bundle conventionally associated with the sentence-level vehicle (to be explicated in more detail in Chapter 3). In (7b) I provide a gloss, which serves as mnemonic to identify this bundle of semantic structure – discussed in more detail in the next chapter. In order to indicate that the gloss refers to a lexical concept, I place the gloss in square brackets.

My main analytic concern in Part II of the book is to identify the range of t-FoR constructions that are evident in English – constructions that encode deictic, sequential, and extrinsic reference. T-FoR constructions are, I claim, a subset of argument-structure constructions. Moreover, my primary focus is not on the vehicles – the formal component of these constructions – but rather on their semantic structure – lexical concepts – which I elaborate on in the next chapter.

The nature of the argument I present proceeds in the following way. English has a series of conventional argument-structure constructions encoding motion of various types. An example is the intransitive motion construction (Goldberg 1995). The intransitive motion construction consists of the vehicle and lexical concept given in (8), and is exemplified by the examples in (9).

(8) a. Vehicle: NP1 VP OBL
b. Lexical concept: [ENTITY X MOVES WITH RESPECT TO LOCATION Y]

(9) a. The boat is approaching (us)
b. The boat floats into the cave
c. The cork is drifting on the water

Just as English exhibits motion argument-structure constructions, so too it exhibits a series of t-FoR constructions. Constructions of this kind provide a means of encoding *temporal scenes*. In so doing, they are analogous to motion argument-structure constructions which provide a means of encoding *spatial scenes*. Indeed, the t-FoR construction that motivates (10) is, I suggest, an extension of the intransitive motion construction in (8).

(10) Christmas is approaching

As the notion of a t-FoR construction is a novel one, I provide a characterisation of what I mean by this. A t-FoR construction is a sentence-level symbolic assembly that provides a conventional, language-specific means of encoding a particular type of temporal scene. The hallmark of a t-FoR construction (in English) is that it appears to derive from argument-structure constructions that encode veridical motion and/or spatial relations. Hence, the specific lexical items involved derive from, although they do not specifically refer to, veridical

aspects of motion and space. Like s-FoR expressions, t-FoR constructions provide reference (cf. Levinson 2003). That is, they fix an event with respect to a temporal RP given by a coordinate system, as I shall describe in Chapter 3. The nature of the coordinate system derives from distinct types of transience and concerns distinct temporal relations. A t-FoR, as we shall see, does not, however, involve purely spatial coordinates, axial relations or vectors. Hence, a t-FoR, as understood in this book, is quite distinct as a theoretical construct from an s-FoR. It involves temporal, rather than spatial, relations, although these can be computed in part (but only in part), from spatial information encoded as part of the t-FoR. Moreover, quite distinct and detailed temporal information derives from t-FoRs. This includes degree of temporal remove from the RP, relative sequence, and, in some cases, the quality of temporal elapse holding between a *target event* (TE) – only somewhat analogous to the *Figure* (F) in spatial scenes – and the RP. Finally, the individual verbs integrated with a t-FoR construction, verbs that in, for instance, the intransitive motion construction refer to veridical motion, provide what I refer to as *semantic affordances* (Evans 2010b), and thereby different types of temporal relations. This is achieved as a semantic affordance is a conventional inference associated with a specific lexical form.[2] Consider the sentences in (11) by way of example:

(11) a. Christmas is approaching
b. Christmas is whizzing towards us

A semantic affordance conventionally associated with *approaching* (but not *whizzing*) has to do with imminence of occurrence, while a semantic affordance associated with *whizzing* (but not *approaching*) has to do with rapid motion. I will have more to say about semantic affordances in Part III of the book, in Chapter 10 in particular.

A potential objection to the use of the term 'frame of reference' in this context is the following. If a t-FoR does not involve vectors, axiality, and so on, notions apparent in the domain of space, in what sense is it legitimate to invoke the notion of FoR to describe the types of temporal relations I will be discussing in this book? In broad terms, I argue that it is legitimate for the following reason. A t-FoR involves reference points in order to establish a relationship between events in service of identifying a specific temporal point. That is, we are dealing with systems involving temporal points – or 'coordinates' – in order to establish a temporal relation. We would, presumably, not wish to deny that a calendar or a clock provides a (temporal) frame of reference. Indeed, and as we shall see, t-FoRs are at least as complex as s-FoRs – they deploy at least

[2] More precisely, a semantic affordance derives from the semantic potential to which an (open-class) lexical concept facilitates access. This is a notion I begin to develop in the next chapter and in Part III of the book.

the same number of coordinates, in part because both spatial and temporal reference points are deployed in order to fix events in time and establish temporal relations holding between events. And hence, I refer to the phenomena that I discuss as t-FoRs, while recognising that these are not homologues of, nor strictly speaking analogous to, s-FoRs.

While in the past few years there has been a burgeoning interest in temporal reference (see in particular Bender *et al.* 2005, 2010, 2012; Kranjec 2006; Tenbrink 2011; Zinken 2010), nevertheless, relatively little is known about t-FoRs. In particular, much still needs to be discovered in terms of what a full taxonomy of t-FoRs might look like; much remains to be learned as to how they are encoded in language; it is still not fully clear how language interfaces with conceptual knowledge in providing temporal reference; and we do not fully know which components of conceptual knowledge are important for facilitating linguistically mediated temporal reference.

In contrast, the study of the related notion of s-FoRs[3] is well established, both theoretically and in terms of extensive cross-linguistic descriptive analysis (e.g., Fortescue 2011; Levinson 2003; Talmy 2000; see also Brown 2012). There are detailed and persuasive theoretical frameworks for s-FoRs which chart the nature and level of cross-linguistic variation in spatial reference. These frameworks are based on extensive cross-linguistic studies which have investigated a large number of languages from different areal and genetic groupings (e.g., Levinson and Wilkins 2006). Moreover, research on s-FoRs has revealed the extent to which spatial language draws upon innate spatio-geometric mechanisms and abilities as well as learned spatial knowledge allowing us to locate objects, people and places in space (Evans and Chilton 2010; O'Keefe and Nadel 1978).[4]

Given that both space and time are fundamental domains of human experience, it is perhaps surprising that the domain of time, and t-FoRs in particular, have received relatively scant attention. One reason for this, presumably, results from the sometimes mooted view that time is an intellectual achievement, an abstract realm that doesn't exist as a thing in itself, but one that is grounded in and even parasitic on spatial abilities and knowledge. And indeed, research on time perception in psychology, for instance, has failed to find any evidence for an internal centralised biological clock. That said, a large body of research on time perception going back, in some cases, well over a century, has shown that time is a complex, phenomenologically real phenomenon, and is perceived in an inter-subjectively reliable way (see Evans 2004a for a review).

[3] The more usual term for an s-FoR in the literature is a frame of reference (FoR).
[4] That all said, I hasten to add that accounts of s-FoRs are not necessarily complete. For instance, with the notable exception of Tenbrink (2011), accounts of s-FoRs have not generally included motion in accounting for spatial relationships.