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978-1-107-01013-0 - Language, Space and Mind: The Conceptual Geometry of Linguistic Meaning

Paul Chilton

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## Language, Space and Mind

The idea that spatial cognition provides the foundation of linguistic meanings, even highly abstract meanings, has been put forward by a number of linguists in recent years. This book takes this proposal into new dimensions and develops a theoretical framework based on simple geometric principles. All speakers are conceptualisers who have a point of view both in a literal and in an abstract sense, choosing their perspective in space, time and the real world. The book examines the conceptualising properties of verbs, including tense, aspect, modality and transitivity, as well as the conceptual workings of grammatical constructions associated with counterfactuality, other minds and the expression of moral force. It makes links to the cognitive sciences throughout, and concludes with a discussion of the relationships between language, brain and mind.

PAUL CHILTON is Emeritus Professor of Linguistics at Lancaster University.

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To my children, Jonathan and Emily

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## Preface

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This book explores a theoretical format I call deictic space. The term *deictic* comes from the Greek word that means ‘to point’. Humans are probably unique among primates in their ability to point. They point in order to establish joint attention with other humans. It is impossible to point meaningfully unless one is in a certain position, and one’s interlocutor is aware of that position. One’s pointing is relative to a spatial frame of reference. Deixis, shifting points of view, frames of reference, are fundamental to human communication.

Arrows conventionally stand for pointing in a certain direction. Linguists are always using arrows in their diagrams but often in highly abstract ways (as in the re-write rules of Phrase Structure Grammar). Mathematicians use arrows too, standing for vectors, which have distance and direction, within coordinate systems. Frames of reference are needed in order to navigate our environment. They are also needed for directing our actions on that environment using our limbs, primarily arms and hands. Reaching, grasping, pointing and the visual attention that guides them depend on frames of reference.

Abstractly, we can think of navigating, reaching, pointing and attention in terms of geometrical vectors in frames of reference. This is essentially what the book sets out to explore. The starting point for this exploration is in the conceptualisation of space as organised by language. The most obvious spatial expressions in language are prepositions but from there we can proceed to far more abstract conceptual spaces, speculating as to how far elementary structures and operations that geometry has developed can assist us. Basic Euclidean geometry can be regarded as embodied, related to human experience in relation to the space, earth, direction and motion.

The book is full of diagrams of coordinate systems that are meant to evoke the abstract three-dimensional space that I call deictic space and which I think may be the most fundamental part of our language ability. I hope these will not cause the reader too much double vision. I use them not only because the visual is sometimes clearer than the verbal but also because visual cognition (and its cross-modal versions) is so much a part of our spatial experience. The diagrams are based on very elementary geometrical ideas and these have

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some standard logical implications that make it possible to explore the ways in which spatial conceptualisation might – or might not – be part and parcel of our language-based conceptualisation. But since I argue that simple spatial representations can lead to abstract and complex meanings in language, some of these diagrams do end up complicated. I can only beg the reader's patience. The difficulty of 'reading' some of the diagrams is a reminder that after all these are mere attempts to model complex operations that our mind-brains handle with unconscious fluidity.

Just how far we can go in this exploration of deictic space remains an open question. But I suggest in this book that we can go a considerable distance in relating some of our most abstract language-based conceptualisations to an origin in physical space. Here is a rough route map for the book, and some reasons why I take certain paths.

Linguistics has developed various formal metalanguages. Since the one I develop in this book is unusual in some respects and is heavily dependent on diagrams, Chapter 1 gives some initial motivations for adopting and adapting the key geometrical notions of coordinates, transformations and simple vectors. The most obvious application of geometrical description to language concerns literal spatial expressions, primarily prepositions. Chapter 2 develops in more detail the basic geometrical ingredients of the book. It opens with a survey of the geometrical element in spatial prepositions, though geometry is certainly not all there is to their meaning. The chapter crosses an important threshold – moving to a geometrical space that does not refer to physical space but to three dimensions of the mind that are woven into language – the three dimensions of attentional focus, time and reality assessment. The subsequent chapters explore this space, moving into increasingly abstract conceptual spaces that are linked with grammatical constructions.

Chapter 3 is at one level about the phenomenon of attention and the ways in which linguistic constructions act to direct it. At another it is also about arrows and axes, that is, vectors and coordinates, and the ways in which some of their routine properties can be used to capture the schematic conceptual meanings of predicates. The chapter again begins with the modelling of spatial expressions and moves into progressively more abstract meanings of verbs and their grammatical frames – a line of enquiry that returns in Chapters 8 and 9. First, however, Chapters 4 and 5 look into two closely related characteristics of verbal meaning – the conceptualisation of types of event over time and the placement of events in a temporal frame of reference. The purpose in these two chapters is to see if we can bring this area of linguistic enquiry into a unifying geometrical approach, hoping that along the way this approach itself will shed light on the linguistic phenomena themselves. Chapter 6 pursues this latter goal by applying a key geometrical idea that is already found in the description of some prepositional meanings – the mirror transformation of axes.



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What happens if we look for such transformations in grammatical structure? Unexpectedly, it turns out that counterfactual conditionals can be so described, though controversially. Chapters 8 and 9 continue to explore transformations of axes – embedded translated axes – as a way of modelling the idiosyncratic behaviour of verbs in relation to types of complement clause. This line of argument broadly follows one line of cognitive linguistics that sees complementisers and complement clauses as conceptually motivated. Chapter 10 returns to the modelling of counterfactuals that was laid out in Chapter 6, entering into what is the furthest limit of abstraction I have chanced addressing in this book, deontic meaning. This is not the first time in cognitive linguistics that the abstractions of deontic meaning have been found to be rooted in the concrete, but I have attempted here to unify the account with the abstract-geometrical approach, with potentially controversial implications.

All this is based on the spatial hypothesis and some admittedly risky theoretical speculation. What is the theory doing? Is there any evidence that the linguistic mind–brain actually works this way? In Chapter 11, I briefly address some philosophical issues, or perhaps merely raise them for linguists to consider. I also take a snapshot of rapidly developing areas of neuroscience and neurolinguistics that may corroborate some of the theoretical speculations of the book, or at least provide further food for thought.

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