

德古意特认知语言学研究丛书

# SPACE, TIME, AND THE USE OF LANGUAGE

AN INVESTIGATION OF  
RELATIONSHIPS

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## 空间、时间与 语言运用关系研究

Thora Tenbrink 著

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## 出版说明

认知语言学是语言学的一门重要分支学科，自20世纪80年代诞生以来，受到了国际和国内学界的广泛关注。近年来，外教社陆续推出了一系列相关丛书，集中体现了国际、国内的优质研究成果。其中“国际认知语言学经典论丛”收入了Ronald Langacker、Leonard Talmy、Dirk Geeraerts等国际认知语言学领域顶尖学者的经典作品；“外教社认知语言学丛书·普及系列”、“外教社认知语言学丛书·应用系列”则体现了国内学界的最新研究成果。这些丛书因内容权威、见解独到受到了外语界的广泛好评。

在过去几十年中，中国认知语言学研究从最初萌芽到蓬勃发展，逐步走向成熟，形成了系统化、多元化的研究格局，跨学科领域的理论及应用研究都取得了长足进步。为进一步拓宽国内认知语言学研究的视野，方便国内读者查阅和借鉴相关研究成果，我们特地从德古意特出版社近年推出的相关学术图书中精选了7种，组成“德古意特认知语言学研究丛书”，引进出版。丛书汇集了Ronald Langacker、Dirk Geeraerts、René Dirven、Martin Pütz等多位国际认知语言学界权威编著的力作，其中既有关于认知语言学基本理论的必读经典，也有认知语言学与语言习得、语言教学、社会语言学等领域的融合研究，视野广泛，观点新颖，方法多元，文献丰富。

相信本套丛书可帮助广大认知语言学的研习者深入了解认知语言学的理论，把握认知语言学的研究热点和发展趋势，开拓多元化的研究方法思路，进一步推动我国认知语言学研究的长远发展。

# Space, Time, and the Use of Language

An Investigation of Relationships

*by*  
Thora Tenbrink

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# Chapter 1

## Introduction

Does temporal language depend on spatial language? This widespread assumption is intuitively appealing: Spatial and temporal expressions are often similar or identical. Time is generally treated as a “fourth dimension” in relation to space. There is a fair amount of metaphors that consistently express temporal phenomena in terms of spatial language. All this points to a close semantic and conceptual interdependency. But what about the application of the two kinds of linguistic expressions in natural discourse? Does the spontaneous usage of (non-metaphorical) spatial and temporal terms reflect the relationship between the two domains in any systematic way? Most research has focussed on the repertory of language, not the patterns of its usage. This book systematically explores findings on how speakers use genuinely spatial and temporal terms (*in front / behind, before / after*, etc.) to describe the relation of objects or events to each other. The investigation highlights the relationship between cognition and language usage. Using the method of cognitively motivated discourse analysis, novel empirical results on spontaneous usage by English and German native speakers (based on detailed analyses of various, predominantly web-based, corpora) are presented to complement earlier findings. The detailed investigation of a selected range of terms that appear to be parallel in space and time highlights both similarities and fundamental differences in their application. As a result, a new picture emerges: The concepts of space and time are represented in language usage in various systematic ways, reflecting how we understand the world – and at the same time reflecting how our concepts of space and time differ fundamentally.

This book contributes to a debate that has been of interest for cognitive linguists for several decades, concerning the understanding of transfer processes between two conceptually intertwined domains. It addresses the novel question of how such processes come into play in the actual application of relevant expressions in natural discourse. By adopting established approaches from discourse analysis for issues deeply rooted in interdisciplinary research in cognitive science, insights are drawn together from two hitherto largely unrelated fields of research to approach the topic from an original perspective, leading to a deeper understanding of the relationship between the domains of space and time and their expression in language.

### 1.1. The conceptual relationship of time and space

In this book, cognitive science serves as the background for accounting for principles and preferences in the application of spatiotemporal expressions in context. The starting point is the investigation of general issues pertaining to spatial and temporal cognition. The focus then narrows down to the usage of English and German *dimensional* terms, i.e., terms expressing the dimensions of space and time, such as (*in*) *front* / *vor(ne)*, *behind* / *back* / *hinter*, *left* / *links*, and *right* / *rechts*, and their temporal counterparts *before* / *bevor*, and *after* / *nachdem*, including their various syntactic variants. This selection allows for a direct comparison and intricate qualitative analysis of language usage, concerning a subset of conceptually interesting expressions, in two closely related languages within a largely shared cultural context. Both of these languages have been subject to linguistic study for a long time; crucially, there is a broad variety of earlier findings to draw from, specifically in the research area at stake, the investigation of spatial and temporal terms. This provides the necessary context for a well informed systematic comparison of applicability conditions independent of experimental tasks and across natural discourse settings. These earlier findings are complemented by targetted empirical research addressing a number of research gaps identified by the systematic account. The results spell out in more detail a range of principles that, in general, had already been identified as crucial for the usage of these expressions.

The book addresses the popular hypothesis that temporal terms are closely related to, and conceptually (as well as historically) based on, spatial terms (e.g., Haspelmath 1997). While this hypothesis relies mainly on research findings concerning the morphosyntax and semantics of these terms (often in various languages), the present analysis specifically draws on research in the recently blooming area of discourse analysis, applied and accounted for in the light of insights from cognitive science. This allows for a cognitively motivated focus on the semantics-pragmatics interface that is new and unique to the discussion of spatial and temporal terms and their apparent interdependency, based on a fine-grained analysis of their actual usage in natural discourse in two closely related, well-researched and familiar languages. It deals with ways in which spatial terms differ systematically from temporal ones with regard to their particular discursual applicability conditions. Thus, a central aim of the present study is the investigation of whether evidence for the assumed conceptual dependency can be identified with respect to application. The complications involved in

the separation of semantic and pragmatic levels in the analysis of dimensional terms are addressed and discussed in the course of the present work.

One of the reasons for the presumption that temporal expressions depend on spatial ones is the idea that the spatial domain is concrete (i.e., perceptually accessible) while the temporal domain is abstract (i.e., less easy to perceive and to grasp). This is reflected by the notion that the entities associated with space are (concrete) objects, while the entities associated with time are (abstract) events. Now, if concrete entities are easier to handle than abstract ones, it seems to be natural to extrapolate from the experience gained in the concrete domain in order to cope with abstract experience. Thus, events are treated in some respects in a similar way as objects, and the underlying domain of time is understood in terms of experience gained from the more accessible domain of space.

But if time is understood on the basis of concepts of space, this does not necessarily mean that patterns of usage of the linguistic expressions are similar for both domains. Spatial terms are employed in concrete settings, while temporal terms apply to the representation of abstract events. The capacity for transfer should be limited as far as application is concerned, since events are ontologically fundamentally different from objects. Therefore, the conditions for usage could be distinct in some basic and systematic respects, although parallels may well be identifiable. The present work aims to shed light on the patterns of discourse applicability for superficially (i.e., in terms of morphosyntax) similar, and semantically related, spatio-temporal expressions. It will identify the ways in which their usage patterns systematically reflect both conceptual similarities and ontological differences. This is achieved by contrasting the principles and concepts underlying the application of spatial terms with those of temporal terms, and by relating the resulting differences and similarities to the conceptualisations of the underlying domains, as well as to general principles of linguistic communication operating in discourse.

## 1.2. Spatial and temporal language

During the past few decades, spatial terms have proved challenging enough to justify various approaches to their meaning and underlying concepts. Systematic research includes psycholinguistic experiments, formal analyses and specifications, and considerations of a sizeable range of variation in reference systems, i.e., ways of referring to entities in spatial surroundings

by using qualitative descriptions such as *to the left*. However, a number of issues still remain unresolved. For instance, a systematic account of all kinds of reference systems that may potentially underlie a spatial expression is still lacking. Furthermore, the principles and preferences that lead speakers to rely on one kind of conceptualisation in favour of another have only been addressed with respect to a subarea of the available variability: most prominently, research has focused on the perspective chosen, typically either the speaker's or the addressee's. But already with respect to the choice between two basic kinds of reference systems available to speakers, namely, relative versus intrinsic, there is much controversy in the literature.

In the present approach, these issues are addressed in a number of ways. A thorough literature review in Chapter 5 results in a systematic overview of the kinds and sub-kinds of reference systems that have been identified so far. Chapter 6 provides further empirical findings supporting and carrying further earlier hypotheses with respect to speakers' preferences and conceptualisation processes. It also highlights in detail two major reasons why the identification of underlying concepts is specifically complex: On the one hand, there are many ways in which linguistic utterances are underspecified and incomplete in expressing underlying concepts. On the other hand, specific kinds of linguistic forms do not necessarily systematically coincide with specific kinds of underlying reference systems. Therefore, specific care needs to be taken to relate the current spatial scenario, and other information available to the interlocutors, to the linguistic utterance.

For these aims, a web-based study was carried out. This approach is suited for restricting the setting in such a way as to allow for a mapping of utterances and spatial configurations. It allows for introducing fine-grained differences between spatial settings and at the same time for the collection of a great number of native speaker contributions in both English and German. Furthermore, a very common way of identifying one of several present objects is to simply point at the goal object using gestures. Since the target of the present analysis is language, not gestures, and since there is no corresponding device in the temporal domain, a setting is needed in which pointing gestures are ruled out. In a web-based study, pointing gestures (which might, if one wishes, be realised by mouse movements) can easily and naturally be ruled out by the design.

As far as the related domain of temporal terms is concerned, *before* and *after* have been analysed with regard to the formal properties of the temporal phenomena involved, such as topological restrictions on the application of a term. Also, the semantics of these terms have been subject to a broad

range of research, and some findings have been obtained concerning their presuppositional properties. But their actual occurrence in natural dialogues has seldom been in focus, creating the misleading impression that, generally, any two events can be juxtaposed verbally by combining them with the connectors *before* and *after*. However, speakers need a reason for mentioning two events together and expressing the temporal dimension verbally. Temporal order itself is generally sufficiently expressed by syntactic marking of the verb and by textual features, such as juxtaposing sentences in a way that suggests that the events happen in their natural temporal order. Thus, in general it is not necessary to add explicit markers specifying the temporal dimension; obviously, speakers do not employ *before* and *after* in every sentence in which temporal succession is implied. Therefore, it is interesting to look at the semantic and discoursal patterns in which these terms do occur.

This argument is not mirrored by the spatial expressions since language does not, in a way comparable to temporal aspects, provide means of expressing spatial relationships without using explicit spatial markers. For both kinds of terms, thus, the question arises whether there are systematic differences in the application contexts in which these expressions are spontaneously applied by speakers of German and English. Further questions concern how they are used in terms of syntactic and underlying conceptual features, and in terms of other linguistic items that further contribute to conveying the intended relationship.

### 1.3. Materials and methods

This book draws on a variety of data sources. About half of the book is dedicated to a systematic account of earlier results in the literature concerning how spatial and temporal dimensional terms are employed in natural discourse. These overviews already provide a fairly clear idea of the kinds of contextual and conceptual factors that come into play in each case. To complement these insights and to further spell out how the identified factors work in actual discourse, further information is drawn from original empirical analyses based on natural language corpora.

For spatial expressions, the analysis uses original data collected in web-based online experiments on spatial terms for both German and English. For temporal expressions, online available corpora were used to gather English data, taken from the CHILDES and the Switchboard databases, and

the CSPA sample corpus. For German, a dialogue corpus was obtained from the University of Ulm, since German spoken language corpora are not easily accessible (Schmidt 2005). These data sources offer access to a range of fundamentally different kinds of text types in which temporal dimensional terms may occur. Also, as motivated in more detail in the empirical chapters 4 and 6, the specific corpora used for each part of the analysis are specifically suitable for the approach adopted in the present work, which involves a number of additional requirements on the data sources for specific questions that are addressed in the analysis.

The apparent discrepancy between the kinds of data sources used for the spatial versus temporal domains has practical as well as theoretical reasons. For practical reasons, it is unclear how a sufficient quantity of spatial expressions could be obtained in collections of naturally occurring discourse alone. As will become apparent in the present work, spatial expressions depend heavily on the spatial scenario, whether it is actually present or represented internally in a mental model shared to some degree by the interlocutors. Because of this, any analysis of spontaneously occurring dimensional terms is limited by the degree of information available with regard to the spatial knowledge that is necessary for the interpretation of these terms. A simple example illustrates this. Here is an extract from the Switchboard corpus (which was used for the analysis of temporal terms) that contains the phrase *on the left*:

But he finds that by going straight down the middle he usually wins about a quarter a hole because they've been in the rough on the right and then in the rough on the left.

To understand the spatial concept behind this utterance, a number of contextual factors need to be taken into account, including the nature of the game that the speaker is talking about. But even then it remains unclear whether "on the left" refers to the person in question, or to intrinsic sides of the field in which the game takes place. A further, general problem concerns the fact that most natural occurrences of *left* and *right* are not spatial at all, rendering the analysis of syntactic diversity highly problematic.

For these reasons, it is more feasible to collect data in specifically designed scenarios in which the spatial setting can be controlled, than to rely on previously collected natural language corpora in which relevant information may not be available. Web-based experimental studies are suitable in this regard: the relevant discourse factors can be controlled to a much higher degree than in natural discourse, and the spatial scenario can be reduced to a minimum and manipulated in useful ways.

In contrast, temporal expressions do not depend on any entities present in the actual scenario, but are employed in order to juxtapose and locate events (or, more seldom, states) in time. Of course, concrete entities involved in the events might be present in a given scenario, and naturally they can also be referred to, depending on the setting, when talking about the events. But since time itself and the relationships involved in the domain are not perceptible, the conceptualisation of abstract temporal patterns as coherent events involving concrete entities must be captured in the discourse. Thus, the information necessary for interpretation must be contained in – or inferable from – the discourse itself, which makes it feasible to analyse natural language corpora. Furthermore, one of the most prominent research questions in the application of temporal relational terms concerns the ways in which they are spontaneously employed, since temporal order can also be conveyed by other means in language. This phenomenon can only be investigated using data that were not influenced by the analyst.

For illustration, compare the following examples from the data used in the present work.

(1.1) *go to the cube to the left of the sphere*

(1.2) *Just one thing going back to the issue of time before you speak, Eunice.*

The spatial example (1.1) requires analysis with respect to a number of conceptual factors such as the underlying perspective and the position on an axis with respect to the relatum. This kind of information is not available in the textual context, but only via knowledge of the spatial setting. The temporal example (1.2), on the other hand, does not rely on information that is not present in or inferable from the dialogue itself. The utterance invokes the idea that an event (addressing “just one thing”) is to be *inserted* between the present moment and another already expected event (Eunice will speak). This reflects an interesting underlying generalisable concept which may have been a motivation for using a temporal term.

Throughout this book, it will gradually become clear in how far these examples may be representative of the ways in which spatial and temporal dimensional terms are spontaneously employed by speakers of English and German. Conclusions in this regard are drawn not only on the basis of the empirical results, which, after all, stem from very different kinds of corpora, but predominantly on the basis of a thorough review of the available literature in both areas.

The main emphasis of the analysis in the spatial domain concerns the choice and application of spatial reference systems which underlie all us-

ages of spatial dimensional terms, investigating the choice and explicitness with regard to all ingredients involved in using a reference system: an origin and a relatum, a spatial axis, and the possibility of modifying the spatial term by further linguistic means. For the temporal domain, a range of different discourse situations is investigated in which speakers naturally employ temporal expressions; here, their reasons for juxtaposing events linguistically become apparent through the discourse context.

The correspondence between spatial and temporal expressions only occurs with some syntactic variants but not with others. For instance, spatial expressions cannot occur as conjunctions (example (1.5) mirroring (1.8)), and temporal dimensional terms (such as *before*) do not have an adjectival form (example (1.7) mirroring (1.4)).

- (1.3) *The box is to the left of the sphere.*
- (1.4) *It is the left box.*
- (1.5) *\*The box is situated left the sphere is placed.*
- (1.6) *The accident was before Christmas.*
- (1.7) *\*It was the before event.*
- (1.8) *The accident occurred before the Christmas party started.*

The two languages targeted in the present work, English and German, though closely related, also differ with respect to syntactic variability: for instance, English *left* can appear as a superlative (*leftmost*); this is not mirrored in German, as *linkest-* is ungrammatical. Therefore, for both temporal and spatial expressions, one important part of the analysis concerns the conditions of their occurrence in different syntactic contexts. For example, the employment of *before* as conjunction, preposition, conjunctive preposition, or sentence adverbial may involve different semantic or pragmatic conditions and implications. For spatial expressions, it has been claimed that specific syntactic forms can only be used for specific kinds of reference systems, a claim which has not been addressed sufficiently in the literature so far. Therefore, it is a specific aim in the present work to investigate in how far different kinds of syntactic forms can be mapped to specific kinds of underlying concepts.

#### 1.4. Structure of the book

The main argument is reflected in the book's structure as follows. In Chapter 2, the domains of time and space are introduced from the broader per-



spectives of cognitive science and linguistics. Chapters 3 through 6 deal in detail with spatial and temporal language, most specifically with the dimensional terms in both domains. For each domain, there is one chapter providing a theoretical account of earlier findings (Chapter 3 for time, and Chapter 5 for space), and one chapter presenting original empirical results (Chapter 4 for time and Chapter 6 for space). Chapter 7 brings the two domains together again for a comparison, discussion, and assessment of the results in light of the general question addressed in this work, which is: Do the applicability structures of temporal and spatial dimensional terms reflect an underlying conceptual dependency, as indicated by their semantic and morphosyntactic similarity, or are these terms used in independent ways?

Chapter 2 starts out from a general cognitive science approach, addressing the relationship between the conceptual domains of space and time. A widespread view is that temporal concepts are ultimately derived from spatial ones, based on the fact that time seems to be much harder to grasp than space, since space is perceptually accessible in contrast to time. Chapter 2 presents and discusses this view and then moves on to a more neutral approach, working out similarities and differences in cognitive issues pertaining to space and time. In addition, the range of linguistic means to express spatiotemporal relations is identified, and some fundamental differences are worked out that become apparent in the comparison of spatial and temporal linguistic means.

Chapter 3 starts by addressing the question of how speakers represent temporal relationships through language. There are a number of methods available to speakers, such as simply presenting the events talked about in the order in which they occurred. This motivates the question of in what kinds of contexts those terms occur that explicitly specify temporal order, namely, *before* and *after*. The range of linguistic options available for temporal dimensional reference is specified along with their semantic scope. Factors influencing the application of temporal dimensional terms are specifically addressed, along with their ability to trigger associations and inferences that go beyond purely temporal information, and their syntactic variability is tested for in this regard.

While Chapter 3 is based exclusively on previous findings in the literature along with discussions and considerations with respect to the present approach, which includes syntactic reformulation tests that lead to intuitive judgments of applicability, Chapter 4 turns to the empirical analysis of naturally occurring language. Here, syntactic reformulation tests are not