Space and Time in Languages and Cultures
Linguistic diversity

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Volume 36

Space and Time in Languages and Cultures. Linguistic diversity
Edited by Luna Filipović and Kasia M. Jaszczolt

Space and Time in Languages and Cultures

Linguistic diversity

Edited by

Luna Filipović
University of East Anglia

Kasia M. Jaszczolt
University of Cambridge

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Editors and contributors

Editors

Luna Filipović
School of Language and
Communication Studies
Faculty of Arts and Humanities
University of East Anglia
Norwich Research Park
Norwich, NR4 7TJ
United Kingdom
L.Filipovic@uea.ac.uk

Kasia M. Jaszczolt
Department of Theoretical
and Applied Linguistics
University of Cambridge
Cambridge, CB3 9DA
United Kingdom
kmj21@cam.ac.uk

Contributors

Keith Allan
Linguistics Program
Monash University
50 Butterfly Lane
Black Mountain, Qld 4563
Australia
Keith.Allan@monash.edu

Ho Leung Chan
Department of Linguistics
University of Pittsburgh
2816 Cathedral of Learning
Pittsburgh, PA 15260, USA
hoc13@pitt.edu

Willie Costello
Department of Philosophy
University of Toronto
170 St. George Street
Toronto ON, Canada
M5R 2M8
willie.costello@utoronto.ca

Helen Engemann
Department of Theoretical and Applied
Linguistics
Faculty of Modern and Medieval Languages
University of Cambridge
Sidgwick Avenue
Cambridge, CB3 9DA
United Kingdom
hbe21@cam.ac.uk

Jessica Finberg
Department of Linguistics
University of Pittsburgh
2816 Cathedral of Learning
Pittsburgh, PA 15260, USA
jfinberg@gmail.com

Diana Forker
Lehrstuhl für Allgemeine
Sprachwissenschaft
Universität Bamberg
Obere Karolinenstraße 8
96049 Bamberg
Germany
diana.forker@uni-bamberg.de

Anne-Katharina Harr (née Ochsenbauer)
Institut für Deutsche Philologie
Ludwig-Maximilians-Universität
Schellingstr. 3/RG
80799 München
Germany
anne-katharina.harr@lmu.de

Maya Hickmann
Laboratoire Structures Formelles
du Langage
59, rue Pouchet
75017 Paris
France
maya.hickmann@sfl.cnrs.fr

Alberto Hijazo-Gascón
Departamento de Lingüística
General e Hispánica
Universidad de Zaragoza
Pedro Cerbuna, 12
E-50009 Zaragoza
Spain
ahijazo@unizar.es

Béryl Hilberink-Schulpen
Department of Business
Communication Studies
Radboud University Nijmegen
P.O. Box 9103
6500 HD Nijmegen
The Netherlands
b.hilberink@let.ru.nl

Dorothea Hoffmann
Department of Linguistics
The University of Chicago
1010 E 59th Street
Chicago, IL 60637
USA
hoffmann.dorothea@gmail.com

Iraide Ibarretxe-Antuñano
Departamento de Lingüística
General e Hispánica
Universidad de Zaragoza
Pedro Cerbuna, 12
E-50009 Zaragoza, Spain
iraide@unizar.es

Kasia M. Jaszczolt
Department of Theoretical and
Applied Linguistics
University of Cambridge
Cambridge, CB3 9DA
United Kingdom
kmj21@cam.ac.uk

Wojciech Lewandowski
Department of Spanish Philology
Universitat Autònoma de Barcelona
08193 Bellaterra (Barcelona). Spain
woj.lewandowski@gmail.com

Zoe Pei-sui Luk
Department of Linguistics
University of Pittsburgh
2816 Cathedral of Learning
Pittsburgh, PA 15232, USA
pel22@pitt.edu

Didier Maillat
Department of English
University of Fribourg
Europe 20
CH-1700 Fribourg
Switzerland
didier.maillat@unifr.ch

Giovanna Marotta
Department of Linguistics
University of Pisa
Via S. Maria 36
I-56126 Pisa, Italy
gmarotta@ling.unipi.it

Linda Meini
Department of Linguistics
University of Pisa
Via S. Maria 36
I-56126 Pisa, Italy
linda.meini@for.unipi.it

Monica Mosca
Department of Human Studies
Via Galileo Ferraris 116
13100 Vercelli, Italy
monica.mosca@gmail.com

Yumiko Nishi
Department of Asian &
Slavic Languages and Literatures
University of Iowa
111 Philips Hall
Iowa city, IA 52242, USA
yumiko-nishi@uiowa.edu

Inès Saddour
Laboratoire de Recherche sur le
Langage, MSH
4 rue Ledru 63057
Cedex 01 Clermont-Ferrand
France
Ines.SADDOUR@univ-bpclermont.fr

Yasuhiro Shirai
Department of Linguistics
University of Pittsburgh
2816 Cathedral of Learning
Pittsburgh, PA 15260, USA
yshirai@pitt.edu

Peter Svenonius
CASTL/Department of Languages
and Linguistics
University of Tromsø
N-9037 Tromsø, Norway
peter.svenonius@uit.no

Alice G.B. ter Meulen
Dept. de Linguistique
Université de Genève
Rue de Candolle, 2
CH-1211 Genève, 4
Switzerland
alicetermeulen@gmail.com

Norbert Vanek
Department of Theoretical and
Applied Linguistics (DTAL)
University of Cambridge
Sidgwick Avenue
Cambridge, CB3 9DA
United Kingdom
nv244@cam.ac.uk

Ivana Vidaković
University of Cambridge
ESOL Examinations
1 Hills Road
Cambridge, CB1 2EU
United Kingdom
iv212@cam.ac.uk

Keiko Yoshioka
Department of Languages and
Cultures of Japan
Leiden University
P.O. Box 9515
2300 RA Leiden
The Netherlands
k.yoshioka@hum.leidenuniv.nl

Sonja Zeman
Institut für Deutsche Philologie
Ludwig-Maximilians-Universität
Schellingstr. 3/RG
80799 München
Germany
Sonja.Zeman@germanistik.uni-
muenchen.de

FOREWORD

Space and time in languages, cultures, and cognition

The two volumes comprising *Space and Time in Languages and Cultures*, published as HCP 36 and HCP 37, originated as a selection of papers from *Space and Time across Languages, Disciplines, and Cultures (STALDAC 2010)* – an international conference organised by the editors of this collection at Newnham College, Cambridge, April 8–10, 2010. The conference gathered participants from various continents, presenting and discussing work on how humans represent space and time in various languages – including exotic and endangered – as well as how space and time are researched in linguistics, psychology, anthropology, philosophy, and various areas of cognitive science.

The very intricate nature of the relationship between space and time is confirmed by the diversity of the areas of research that are represented by the contributions to the two volumes. This multifaceted approach to spatial and temporal constructs in human language, cognition, and culture enables us to shed new light on the interaction between potentially universal and language-specific/culture-specific features that shape the way people interact with each other and with their environment. Language as a uniquely human phenomenon provided a unifying platform for the discussions in the present volumes. The principal aim we have with this collection of contributions is to show that an all-encompassing understanding of space and time in language is not achievable in isolation, within a single discipline, but can be attained only through the study of linguistic habits, social contexts, scientific knowledge, and philosophical interpretation.

The chapters in the collection follow several leading themes. The first volume, HCP 36, focuses on *language diversity* and presents research on, among other things, how location in space and time is conveyed in various languages; space and time in language acquisition; and speaking about motion, with its universal and language-specific aspects (see the Introduction to HCP 36). The second volume, HCP 37, devoted to *language, culture, and cognition*, focuses on the central topic of the representation of events; cross-cultural differences in representing time and space; and various aspects of the conceptualisation of space and time (see the Introduction to HCP 37). For the reader's convenience, the tables of contents of both HCP 36 and 37 are listed in each volume.

Looked at more summatively, in juxtaposing the conceptual domains of spatial and temporal thought, the present two-volume collection contributes to various interrelated domains of research and types of research methods. Thinking and speaking about space and time frequently requires mobilising both linguistic and extralinguistic means of expression and hence these two domains are particularly conducive to fulfilling a role as the testing ground for theories of interaction, and therefore division of labour, between lexicon, grammar, and pragmatics. Several contributions address this question of the lexicon/grammar/pragmatics trade-offs, for example in the domain of spatial deixis, time/tense mismatches, aspect, and language acquisition. Chapters in this category also contribute valuable data and theorising to the debate on linguistic relativity vs universalism.

The topic of event construction can be safely regarded as pervading all sections in both volumes. Event type, its internal structure, boundaries, or the language-dependence of the construal are taken up in most contributions. Space is frequently addressed through cross-linguistic or cognitive analyses of motion events. Similarly, temporality, both external (tense) and internal (aspect) to the event, yields easily to contrastive, developmental, and psychological analyses.

As far as methods are concerned, the theme of spatial and temporal reference is particularly conducive to experimental and other empirical testing: data-based studies prevail in the collection. Formal semantic, philosophical, and theoretical contrastive linguistic approaches are also represented. They contribute to the discussion of event structure, tense, and aspect, among other things. The first volume collects many pertinent examples of contrastive linguistic research, both synchronic and diachronic, and both experimental and non-experimental. The second volume exemplifies interdisciplinary research methods, crossing the boundaries both within and between linguistics, anthropology, psychology, and philosophy.

There are, of course, many aspects of time and space research that have not been covered in this collection, for example in the areas of neuroscience, formal syntax, metaphysics of time, or tense logic, to name a few. The field is indeed vast. The present collection, albeit cross-disciplinary, has language and cognition as its uniting theme but even in this domain, broad in itself, it contributes merely a selection of ideas that are currently in the focus of attention. We hope it will galvanise the emergence of new research questions, ideas, and solutions.

We would like to acknowledge our gratitude to our colleagues who assisted us in the preparation of this collection. First, we would like to thank Malcolm Todd for his careful and thoughtful copy-editing. Next, our thanks go to Jos Tellings for editorial assistance in the early stages of the project and to our Cambridge STALDAC team for their help in organising the event from which the papers stem: George Walkden (Conference Secretary), Alistair Appleton, Jesper Carlson, Chris Cummins, Chi-Hé Elder, Minyao Huang, Eleni Kapogianni, Jane

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Kasia M. Jaszczolt
Luna Filipović

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INTRODUCTION

Linguistic diversity in the spatio-temporal domain

Luna Filipović and Kasia M. Jaszczolt
University of East Anglia / University of Cambridge

1. Preliminary remarks

It is a widely shared perception that cross-linguistic and cross-cultural studies are notoriously unrigorous and unregimented as far as research methodology is concerned. Conclusions are often hypothetical or partly supported by limited data sets. But at the same time this is one of the most challenging types of linguistic inquiry in that contrasting languages and cultures requires an agreed common unit of comparison (*tertium comparationis*). In addition, the inquiry requires a different unit for different levels of linguistic analysis, to mention only contrasting lexemes, structures, speech acts, or politeness strategies.[1] Moreover, contrasting languages means not only contrasting language systems, but also contrasting language use in all its dynamics, namely discourse strategies, commonly shared inferences, presuppositions, and, as part of contrastive pragmatics, also contrasting (anthropological) cultures. The latter is not an easy task: as Sperber (1996: 97) puts it, "explaining cultural beliefs … involves looking at two things: how they are cognized by individuals and how they are communicated within a group". In a more memorable dictum, he says that "*[c]ulture is the precipitate of cognition and communication in a human population*" (*ibid.*). In different cultures, people use different norms, different rules, of conversational interaction. As Wierzbicka (1991: 69) puts it in her *Cross-Cultural Pragmatics*,

1. In different societies, and different communities, people speak differently.
2. These differences in ways of speaking are profound and systematic.
3. These differences reflect different cultural values, or at least different hierarchies of values.
4. Different ways of speaking, different communicative styles, can be explained and made sense of, in terms of independently established different cultural values and cultural priorities.

1. On *tertium comparationis* see Krzeszowski (1984, 1990); Jaszczolt (1995/2012).

Therefore, in cross-cultural contrastive studies, it is essential to investigate not only the systematic differences pertaining to language as a code (called sometimes 'grammatical competence' and arguably also including 'textual competence') but also the so-called 'pragmatic competence' and 'sociolinguistic competence' – the first one composed of the knowledge of what speech act, with what illocutionary force, is likely to be issued by the utterance ('illocutionary competence') and knowledge of social and situational appropriateness ('sociolinguistic competence'; see Kecskes 2012: 602).

This requirement of the breadth of the cross-linguistic enquiry applies universally. The differences pointed out by Wierzbicka pertain to all domains of expression, and it is not an exaggeration to say that they are particularly diaphanous in culture-specific spatial and temporal reference. In the spatial domain, languages differ in expressing spatial relations between various combinations of absolute (e.g. 'south', 'north'), relative ('to the left' or 'to the right' of the speaker), and intrinsic ('x has y at his chest'; see Pederson *et al*. 1998). The test for incompatibility of conceptualisations is here the impossibility of translating one frame of reference into another, making the same distinctions between situations when they are described in two different languages (see Levinson 1999 [1996]). Next, languages also differ with respect to the prioritisation of one component of an event over another, for example path over manner in motion events (Slobin 1996, 2006; Filipović 2007a, 2007b, 2010, 2011). Further, adpositions differ to such an extent that researchers conclude that the hypothesis of universal conceptual categories may not be valid. For example, Tiriyó has an 'aquatic adposition' *hkao*, '(be) in water', and an adposition *awëe*, meaning 'suspending involving a figure supported by a point such that the figure hangs down on either side of the point' (Levinson *et al*. 2003: 496; Levinson 2003).[2] Researching spatial reference in this cross-cultural and cross-linguistic perspective not only elucidates the human concept of space but also projects to the domains where space is used for conceptualisation and expression, for instance in metaphorical descriptions such as fictive motion ('This road winds up the hill'; see Talmy 2000).

The domain of space, with its fundamental role in human thinking and reasoning, represents an ideal testing ground for an in-depth exploration of the dynamic interdependence between language and non-linguistic cognition, factors in language acquisition, as well as language variation and the limits of variation (see Filipović 2012 for an extended discussion on these topics). We could expect that, given the cognitive unity of mankind and the universal capacity to process objects and events in space, the cognitive domain of space should be full of prime

2. On a proposal of abstract templates underlying spatial concepts ('semplates') see Levinson and Burenhult (2009).

examples for conceptual/semantic universality. However, the linguistic variation in this area is immense, and some would argue that both conceptualisation and lexicalisation of space are affected. Spatial reference is much less uniform across languages, even closely related ones, than we might expect. Some would say that they just appear to be different on the surface but that essentially and underlyingly, they are not very different from one another (see Jackendoff 1995). Others call such views of universality a myth (Evans and Levinson 2009).

The need to disentangle the universal and language-specific features of our thinking and speaking about space is reflected in the attempt to classify languages based on spatial lexicalisation. For example, Len Talmy studied the ways in which different linguistic means across languages are used to refer to cognitive domains. The regularities in these lexicalisations formed the basis for the typology of languages he proposed (Talmy 1985). Talmy focused on *spatial schemas* in particular because of their ubiquity in human language and human cognition. We can study how perception, cognition, and language are interrelated in the reference to dynamic spatial relations that constitute *motion events*. Talmy shows that some languages (e.g. Romance languages) typically express Path in the verb and thus they are termed *verb-framed*. For example, in Spanish one cannot say the equivalent of the English 'Jerry ran out of the house' but rather it has to be 'Jerry exited the house running' (i.e. Spanish: 'Jerry salió de la casa corriendo'). Germanic languages express Path outside of the verb, in elements that Talmy terms "satellites" (e.g. particles of different kinds – like 'out' in 'Jerry ran out of the house' – and prefixes, adverbials, etc.) and such languages belong to the *satellite-framed* group. The consequences of these typological differences are different narrative preferences across languages and the variation in habitual provision or omission of information in both spoken and written communication (cf. Slobin 1996, 1997, 2000, 2003, 2006; Filipović 2007a, 2007b, 2008). A number of chapters in the current volume address specific questions related to language variation along different typological dimensions and effects of cross-linguistic diversity on discourse strategies, language use, conceptualisation, and acquisition.

In the domain of temporal reference, cross-linguistic differences are arguably even more salient than those in the spatial domain, in that arguably every utterance has temporal reference, as well as conveying aspectual information (see e.g. de Saussure 2012). There are languages like Hopi that grammaticalise the source of information, and thereby emphasise the reliability and certainty, in preference to the temporality of the event (Aikhenvald 2004), and languages that lexicalise one, two, or even three days back or forth from the deictic centre ('now'); for example, Japanese has three days back from 'today' and two days ahead. There are languages, like English, in which the main grammaticalised distinction is that between past and non-past, and others, like French, with a three-way distinction

into past, present, and future. Others, like Yucatec Maya or Navajo, do not grammaticalise temporality at all. Thai uses tense and aspect optionally, when temporal information cannot be pragmatically inferred (Srioutai 2006; Jaszczolt and Srioutai 2011). Other topics of interest here include the question as to whether the left-to-right conceptualisation is presupposed in the past-present-future distinction (e.g. Casasanto and Boroditsky 2008); the lexicon-grammar-pragmatics trade-offs for externalising the location in time (e.g. Jaszczolt 2009); the significance of aspectual choices when an eventuality is reported (see e.g. Boogaart and Trnavac 2011 on cross-linguistic differences in correlating imperfective aspect with subjectivity) and the meaning of lexical aspect (e.g. Rothstein 2004); or the 'atemporal', culture-specific use of tense as an indicator of a speech act (de Saussure 2012).

2. The contributions to this volume

In this volume the authors focus on linguistic diversity in talking about space and/or time. The approaches to these topics vary in terms of methodology, data sources (e.g. one, two, or more languages), and granularity in the discussion (e.g. offering an overall contrastive view on spatial or temporal reference or focusing on one temporal issue such as the tense/aspect distinction or on selected items in the spatial inventory of a language, such as cases or prepositions). The volume is divided into three thematic sections and the chapters within each section are interrelated by virtue of a common thematic thread.

2.1 Representing location in space and time

The first section is dedicated to how languages reflect the conceptualisation of space and time, which is currently the topic at the forefront of many disciplines in cognitive science. The core issue lies in the need to reconcile the linguistic diversity in expressing spatial and temporal reference with their arguably universal conceptual foundations. The focus here is on contrastive semantics and pragmatics of spatial and temporal expressions.

The opening chapter is by **Diana Forker**, "Spatial relations in Hinuq and Bezhta", which focuses on the spatial case system in two Nakh-Daghestanian languages and offers an overview of the main linguistic means used for the lexicalisation of space in these two arguably lesser-known languages. She singles out the concepts that are relevant for the expression of spatial configurations, namely position, contact, and animacy. She also highlights the ways in which temporal relations are coded by means of spatial cases.

In "Pragmatically disambiguating space: Experimental and cross-linguistic evidence", **Didier Maillat** proposes a pragmatic model of spatial language, in which spatial expressions are disambiguated inferentially, relying on general pragmatic principles. He provides experimental and cross-linguistic evidence towards the determination of how much spatial information is coded in the language and how much is to be inferred.

Next, with a focus on temporal location, **Keith Allan** in "The semantics of the perfect progressive in English" offers the view of perfect as a retrospective tense. He proposes that the progressive is an aspect and that perfect is a tense albeit with some aspectual characteristics. In this approach there is no conflict between the perfect and the progressive, as in *HAVE been* V*ing*.

Peter Svenonius in "Drowning 'into' the river in North Sámi: Uses of the illative" contrasts North Sámi and English expressions of location and directed motion. He observes that North Sámi uses one set of expressions (directional or illative) both for changes of location and for unchanging locations of changes of state. In this way the expression of location is sensitive to the temporal aspect or Aktionsart of the predicate. He analyzes this in terms of differences in the semantic functors that English and North Sámi use to construct directed motion expressions: the North Sámi illative and locative predicate over events while English locative PPs predicate over intervals. A consequence of this is that English cannot use locational PPs to get source readings in the way that North Sámi can.

Kasia Jaszczolt discusses the variety of means that languages use for expressing temporal reference and temporal ordering. In her paper titled "Cross-linguistic differences in expressing time and universal principles of utterance interpretation" she investigates the hypothesis that linguistic diversity can be subjugated under universal principles of utterance interpretation. Using a contextualist framework of Default Semantics (DS) (see Jaszczolt 2005), she demonstrates the interaction of sources of information intended by the speaker, as well as mutual trade-offs among lexicon, grammar, and pragmatics in expressing temporality.

Alice ter Meulen's paper "Modelling temporal reasoning: Aspectual interaction in determiners, adverbs, and dialogue" offers a formal analytic perspective on specific patterns of temporal reasoning that involve interactions of determiners with aspectual adverbs. She provides new insights into the role aspectual adverbs play in creating cohesive context at the level of information structure. For example, her analysis of the novel data on the interaction of aspectual adverbs with temporal adverbs underlies a view of temporal reasoning in cohesive contexts as a form of situated causal reasoning.

Norbert Vanek's chapter "Language-specific perspectives in reference to time in the discourse of Czech, English, and Hungarian speakers" brings together cross-linguistic data from these three languages in an effort to account for systematic

differences in event-construal-based language-specific processes of time "perspectivation". Vanek claims that the assignment of different temporal perspectives stems from differences in the linguistic means that are available for encoding temporality in particular languages, associated with the goal of minimising ambiguity.

Finally in this section, **Sonja Zeman** adopts frames of reference as the crucial concept in the space-time interface in her chapter "More than "time": The grammaticalisation of the German tense-system and 'frame of reference' as a crucial interface between space and time". The distinctions in the spatial frames of reference are applied to the temporal plane in order to show their role in the conceptualisation of temporal as well as spatial relations. From a historical linguistic perspective, it is shown that the distinction of different reference frames involves relevant implications with regard to the evaluation of the line of development from orality to literacy.

2.2 Space and time in language acquisition

A particular contribution to the study of the diversity in spatial and temporal reference comes from empirical research in first- and second-language acquisition and bilingualism. By studying how spatio-temporal relationships are forged within and via language we can achieve a better understanding of cross-linguistic diversity as well as universality of these two conceptual domains. For example, recent research in language development and bilingualism indicates that it is both universal and language-specific factors that underlie the speakers' descriptions of events in cognitive domains such as motion or location in space (Bowerman and Choi 2003; Filipović and Vidaković 2010; Landau 2010; Filipović 2011). Chapters in this section of the volume address a variety of issues with regard to first- and second-language acquisition of spatial and temporal concepts.

First, in "L2 acquisition of tense-aspect morphology: Lexical aspect, morphological regularity, and transfer" **Ho Leung Chan**, **Jessica Finberg**, **Willie Costello**, and **Yasuhiro Shirai** discuss acquisition phenomena of tense and aspect in L2 English. Their results provide support for the Aspect Hypothesis, whereby lexical aspect is shown to correlate with the distribution of tense-aspect morphology. In practice, this means that learners would tend to use past/perfective markers with telic predicates and progressive markers with activity verbs.

In "Motion events in Japanese and English: Does learning a second language change the way you view the world?", **Zoe Pei-sui Luk** investigates language-specific effects on acquisition of motion expressions by English learners of Japanese and Japanese learners of English. She tests the possibility that L2 influences the habitual attention imposed by L1 when it comes to what components of motion events speakers attend to. She addresses the question of a potential

correlation between language education and the processing of motion events, whereby as speakers receive more formal education, they begin to pay attention to other aspects of a motion event, namely those that are not obligatorily encoded in their native language.

Ivana Vidaković's bidirectional experimental study of the acquisition of motion expressions by Serbian learners of English and English learners of Serbian provides an in-depth insight into the multiple factors influencing L2 acquisition. In the chapter "'He walked up the pole with arms and legs': Typology in second language acquisition" she detects both L1 and L2 language-specific factors that play a role in the acquisition process and she also highlights the part played by L1 linguistic attention across all proficiency levels. She argues that the universal tendencies she detected in L2 acquisition stem from world knowledge about motion and general cognitive abilities, such as problem-solving.

In the motion event lexicalisation context **Helen Engemann**, **Anne-Katharina Harr**, and **Maya Hickmann** discuss online processing strategies in bilingualism and their focus is on bilingual child language development. In their chapter "Caused motion events across languages and learner types: A comparison of bilingual first and adult second language acquisition", the authors argue that bilingual English/French children's production shows parallels both with monolingual first language acquisition and with adult second language acquisition. They also detect a unidirectional pattern of cross-linguistic influence whereby bilinguals' motion descriptions in English closely mirror those of corresponding monolinguals, while French production manifests influence from English lexicalisation patterns with similar transfer strategies to those of adult learners of French.

Giovanna Marotta and **Linda Meini** analyse the formation of the spatial preposition system in Italian as a second language. In their chapter "Spatial prepositions in Italian L2: Universal and language-specific principles" they discuss empirical data relative to Spanish, German and English learners of Italian with crucial reference to the theoretical debate about spatial language, in which a nativistic approach and a relativist/functionalist approach are competing. Their analysis shows how universal mechanisms, both cognitive and linguistic, drive the process of acquisition in this specific domain. They also tease apart the universal principles from language-specific formal constraints.

Finally in this section, **Inès Saddour**'s chapter "Expressing simultaneity using aspect: A comparison of oral productions in French L1, Tunisian Arabic L1, and French L2 by Tunisian learners" contrasts Tunisian Arabic and French in the expression of simultaneity and studies the effects of this contrast in the acquisition of French by Tunisian Arabic speakers. The study illustrates the interplay between L1 and L2 influences in the acquisition of this temporal relation in expressions of events.

2.3 Dynamic relations in space and time domains

The authors in this section discuss cross-linguistic diversity and variation in the area of dynamic spatial and temporal relations, such as motion, event duration, and progression. The emphasis in this section is on the inherent characteristics of these notions which can be gleaned from the ways languages express them.

Iraide Ibarretxe-Antuñano and **Alberto Hijazo-Gascón** in "Variation in motion events: Theory and applications" focus on the role of intratypological and dialectal variation in the lexicalisation of motion events and its application to second-language acquisition. They propose a cline of Path salience on the basis of twenty-one languages and show that dialects within two Romance languages (Spanish and Aragonese) differ in the type of linguistic resources they use as well as in their quality and quantity. Using acquisition data from L2 Spanish and L2 Basque, they also indicate some areas that can benefit from their approach and analysis, such as conceptual transfer, deixis, and idiomaticity.

Next, in "Italian motion constructions: Different functions of 'particles'", **Monica Mosca** proposes a set of semantic and grammatical discrimination criteria that can help us to distinguish between the semantic-functional and the syntactic role of prepositions, which makes it possible to discriminate between prepositions expressing Path and the semantically weaker ones that fulfil the role of prepositional case markers.

In **Yumiko Nishi**'s chapter "A temporal approach to motion verbs: 'Come' and 'go' in English and East Asian languages" the author offers a cross-linguistic analysis of the temporal semantics of 'come' and 'go'. Nishi cites examples from English, Japanese, Chinese, and Korean in order to determine the potentially universal as well as language-specific lexical semantic features of these verbs and their aspectual information. She detects and highlights cross-linguistic differences in how the two verbs express the duration of the event.

In "The role of grammar in the conceptualisation of 'progression': A comparative analysis of Dutch and Japanese event descriptions" **Keiko Yoshioka** and **Beryl Hilberink-Schulpen** contrast the performance of Dutch and Japanese speakers in an experimental situation that examine the effects of the availability of grammaticalised forms of aspect on the choice of temporal perspective. Their results strongly suggest that the interaction between the characteristics of viewed events and the grammatical inventory of language has a more prominent role in perspective-taking than the mere presence of grammatical means of expressing aspect.

Wojciech Lewandowski's contribution, "The locative PP motion construction in Polish: A third lexicalisation pattern?", is related to the realm of dynamic spatial relations and the semantic typology of motion events. He studies uses of

locative and directional PPs as alternative ways of expressing spatial endpoints in Polish. He argues that in Polish, a satellite-framed language, the motion construction using locative PP reflects a verb-framed lexicalisation pattern. He relates the existence of the goal-marking by the locative PP in Polish to the Goal-bias found in human spatial cognition.

The concluding chapter of this section and this volume, "Path salience in motion descriptions in Jaminjung", is by **Dorothea Hoffmann**, who provides evidence that places Jaminjung, a non-Pama-Nyungan language of northern Australia, towards a middle position on the Path scale. She also addresses the question of the granularity of events and suggests that granularity is isomorphic with considerations of Path and Ground in discourse.

3. Perspectives for future research

The research reported in this volume significantly pushes forward the boundaries of our understanding of how we speak and think about time and space. However, it also opens up new possibilities and triggers questions for future research. One area for further study is that of conceptual universals in these two domains. The chapters give evidence of overwhelming linguistic diversity as well as a strong indication that this diversity may be only superficial. This evidence comes from various research areas that contribute to the understanding of human cognitive processes. One of the challenges is to make semantic and pragmatic theories more empirically informed. Another is to understand the mechanisms of human cognitive processing through the study of language acquisition and linguistic interaction in general. As shown in this volume, the most promising way of achieving such goals is to look at cross-linguistic diversity using different methodologies, different languages, and different theoretical approaches.

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PART I

Representing location in space and time

CHAPTER 1

Spatial relations in Hinuq and Bezhta*

Diana Forker
Universität Bamberg

This chapter deals with spatial relations in Hinuq and Bezhta, two Nakh-Daghestanian languages. The focus is on the expression of location by means of the rich spatial case systems of these languages. Additionally, the contribution of postpositions to the expression of spatial relations, and the coding of temporal relations by means of spatial cases are taken into account. In order to visually represent the functional range of the spatial cases multidimensional scaling has been used. The central concepts for the expression of location in Hinuq and Bezhta that can be identified are position, contact, and in Hinuq animacy.

Keywords: location, Nakh-Daghestanian languages, spatial case, topological picture series, multidimensional scaling

1. Introduction

Time and space lie at the heart of every human experience and are directly or indirectly reflected in every linguistic utterance. Levels of conceptualization and the linguistic means of representing time and space differ to a large extent from language to language. The question whether the human conceptualization of time and space builds on universal categories or not and possible instances of such universals are a matter of an on-going debate (cf. Jackendoff 2005; Levinson and Wilkins 2006). This paper contributes to the debate by exploring the way in which time and especially space manifest themselves in two closely related Nakh-Daghestanian languages, Hinuq and Bezhta. These two languages employ similar linguistic means to cover the domains of space and time. But they group spatial

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and temporal relations that are expressed by one linguistic form in very different ways thus arriving at different categorizations.

The expression of space in Nakh-Daghestanian languages has thus far not been thoroughly investigated. There are a few accounts of individual systems of spatial cases in these languages (cf. Comrie and Polinsky 1998; Schulze 2009; Abdulaev 2011) or of individual spatial meanings (Ganenkov 2005) as well as a small number of papers giving a general overview of the spatial case systems of Nakh-Daghestanian languages (cf. Comrie 1999; Daniel and Ganenkov 2009; Ganenkov 2010). Nevertheless, the literature focuses almost exclusively on spatial case systems without taking into account other linguistic resources such as spatial postpositions and adverbs, verbs of motion and posture, etc.

In this chapter, I want to overcome this lack by taking into account both spatial cases and spatial postpositions and the interaction between them. I offer a description of the linguistic means available for the lexicalisation of space in two Daghestanian languages from the Tsezic branch of the family, Hinuq and Bezhta, To be more precise, I deal with those devices used for the description of topological relations that Levinson and Meira (2003: 486) call 'basic locative constructions', i.e. answers to where-questions. Additionally, I take a brief look at the expression of temporal relations, since for them basically the same means are employed. I have chosen Hinuq and Bezhta because these languages, although quite closely related, show interesting differences in the way in which they divide up the expression of spatial relations by using a by and large cognate set of suffixes.

The Tsezic languages are a group of closely related languages belonging to the Avar-Ando-Tsezic sub-branch of the Nakh-Daghestanian language family. They can be divided into East Tsezic (Tsez, Hinuq, Khwarshi) and West Tsezic (Bezhta, Hunzib). All Tsezic languages are spoken in Daghestan (Russia) in the Caucasus. They have ergative case-marking. Other grammatical cases besides the absolutive and the ergative are first and second genitive, instrumental, and in Hinuq the dative. In addition to these, the languages have a fairly rich inventory of spatial cases, especially in the case of Tsez which can be said to have 112 spatial cases (Comrie and Polinsky 1998; Abdulaev 2011). The spatial cases express not only spatial relations and orientation, but also temporal and grammatical relations.

The data on which this chapter is based come mainly from elicitation with the 'topological pictures series' (see Section 3), with some additional data from corpora. The Hinuq corpus has been collected by the author; the Bezhta corpus consists of the memories of Šeyx Ramazan, written down by himself at the end of the last century, translated and edited by Madžid Xalilov. Additionally, available grammars have been consulted (Bokarev 1959; Lomtadze 1963; Xalilov 1995; Isakov and Xalilov 2004; Kibrik and Testelec 2004).

2. Spatial cases and postpositions

2.1 Morphological make-up and function of spatial cases

The major means of expressing spatial relations in both Hinuq and Bezhta are spatial cases, since both languages have quite a large number of them. In addition, the languages have each about a dozen spatial postpositions and a small number of spatial nouns and positional verbs. Because the spatial nouns and positional verbs (almost) never occur in the data elicited for this chapter, they will not be taken into account further. Instead, I concentrate on the core of space expression in Tsezic, the spatial cases and to a lesser extent the postpositions.

Hinuq has a total of thirty-six spatial cases. The twenty-eight most important suffixes are displayed in Table 1.

Table 1. Spatial cases in Hinuq

	Essive	**Lative**	**Ablative**	**Directional**
CONT	*-ɬ*	*-ɬ-e-r*	*-ɬ-e-s*	*-ɬ-e-do*
IN	*-V / -ma*	*-V-r / -ma-r*	*-V-s/-ma-s*	*-V-do / -ma-do*
SUB	*-ƛ*	*-ƛ-e-r*	*-ƛ-e-s*	*-ƛ-e-do*
SPR	*-ƛ'o*	*-ƛ'o-r*	*-ƛ'o-s*	*-ƛ'o-do*
AT	*-qo*	*-qo-r*	*-qo-s*	*-qo-do*
ALOC	*-de*	*-de-r*	*-de-s*	*-de-do*
ILOC	*-ho*	*-ho-r*	*-ho-s*	*-ho-do*

Bezhta has almost fifty spatial cases. The most frequent suffixes are given in Table 2. This table contains three empty cells for cases that were impossible to elicit and are not attested in the corpus.

Table 2. Spatial cases in Bezhta

	Essive	**Lative**	**Ablative**	**Directional**
CONT	*-ɬ*		*-ɬ-co*	*-ɬ-da:*
IN	*-ʔ*	*-ʔ-il*	*-ʔ-is*	*-ʔ-da:*
SUB	*-ƛ*		*-ƛ-co*	*-ƛ-da:*
SPR	*-ƛ'a*	*-ƛ'a-l*	*-ƛ'a-s*	*-ƛ'a-da:*
AT	*-qa*		*-qa-s*	*-qa-da:*
ALOC	*-doy*	*-doy-l*	*-doy-s*	*-doy-da:*
NEXT	*-ɣa*	*-ɣa-l*	*-ɣa-s*	*-ɣa-da:*
COMIT	*-ɣoy*	*-ɣoy-l*	*-ɣoy-s*	*-ɣoy-da:*

After analysing the available grammars and the corpora we can give a preliminary characterisation of the basic system of location markers in Hinuq and Bezhta along the following lines. There are six location suffixes occurring in both languages: SPR, SUB, ALOC, IN, CONT, and AT. SPR means roughly 'on', SUB 'under', IN 'inside', ALOC 'near' or 'at', and AT 'at', 'on', 'to', 'in'. ALOC is an abbreviation for 'animate location' because this case is mostly used when indicating the location of animate nouns. In Bezhta AT is hardly ever used with spatial meanings. If it occurs in spatial function, then the figure (i.e. the noun of which the location is given) must be animate. However, the case occurs almost exclusively in grammatical functions. CONT, which also occurs in both languages, differs considerably in its use and are treated in more detail in Section 3.3.

In addition to these six suffixes Hinuq has an ILOC suffix ('inanimate location'), which means 'near' or 'at' and is almost exclusively used to indicate the location of inanimate nouns. Bezhta has two more suffixes, NEXT meaning 'next to', and COMIT, which is mainly used in comitative constructions.

Among the orientation suffixes the variation is smaller. The basic orientation markers and their meanings are:

- Essive: location and together with motion verbs also movement to a goal
- Lative: movement to a goal
- Ablative: movement from or out of a reference point (source)
- Directional: movement to a goal, similar to the Lative

For the expression of motion events to or towards a goal usually the Lative or the Directional cases are used. However, in both languages the Essive, which normally denotes only location, can in combinations with verbs of motion also express goals. A similar alternative use of spatial prepositions in combination with case markers that normally denote only location but can under certain circumstances also refer to spatial goals has been noted for Slavic languages (cf. Lewandowski, this volume, and the references therein). Lewandowski (this volume) suggests that so-called *Goal bias* (cf. Lakusta et al. 2007; Marotta & Meini, this volume) in language and non-linguistic representation could deliver an explanation for the fact that linguistic expressions with basically locative meaning can in the appropriate context denote a motion to a goal. It has been shown that speakers make more fine-grained semantic distinctions at event endpoints (= goals) than at event beginnings (= source). This is precisely the case in Hinuq and Bezhta: in both languages three orientation markers convey goals (Essive, Lative and Directional), but only one conveys source (Ablative). Interestingly, there are languages that behave exceptionally: Svenonius (this volume) analyses North Sámi, a Finno-Ugric language with two spatial cases. In this language it is the Locative that expresses

not only location, but also source (i.e. movement from or out of a reference point), whereas the Illative denotes movement to a goal.

Every location marker can be combined with almost every orientation marker. Morphologically and with regard to their spatial semantics these combinations are quite transparent. The Essive suffix is always Ø. Therefore, all combinations with the Essive consist of the location markers alone. In the remainder only the Essive case is considered, since the topic of this paper is the semantics of the location suffixes. The function of other orientation markers remains a topic for future research.

The range of functions served by the local markers may be roughly divided into (i) location and orientation (including spatial, temporal, and metaphorical location and orientation), and (ii) grammatical use (including argument marking of simple and derived verbs, formation of non-finite verb forms with spatial cases and the expression of purpose, of the standard of comparison and of possession); for a more detailed account of the non-spatial functions see Cysouw and Forker (2009) and Forker (2010).

2.2 Spatial postpositions

Both languages have about a dozen spatial postpositions that govern one or several spatial cases. Postpositions are easily distinguished from case suffixes. Friedman (1992) lists some arguments for distinguishing spatial cases from postpositions and vice versa, which are applicable to Hinuq and Bezhta:

a. Nouns with spatial case marking can be followed by postpositions ((1b), (3)).
b. Several postpositions govern more than one case, e.g. in Hinuq the postposition *teł* 'in(side)' governs both the IN-Essive and the CONT-Essive; in Bezhta *sōːyicʾo* 'around' governs both the ALOC-Essive and the COMIT-Essive.
c. Constructions with postpositions and their semantically related spatial cases can have different meanings, e.g. in Bezhta the ALOC-Essive means usually just 'near X', but in combination with a postposition the localisation is indicated more clearly:

(1) a. Bezhta
Ø-ōqʾo-yo hudi is raład-ba-doy
I-come-WPST this brother(I) sea-OBL-ALOC
'This brother came to the sea.'

b. *du-doy äⁿydäː gähiyo tušman*
you.SG.OBL-ALOC in.front be.PTCP enemy
'the enemy in front of you'

d. Some spatial cases can have non-spatial meanings that are not available for their semantically related postpositions:

(2) Bezhta
*do wahaco q'owa-ƛ'a (*ƛ'odo) Isa cā: gul-ca*
I.ERG this.OBL child-SPR (*on) Isa name put-PRS
'I name this child Isa.'

In addition, postpositions are phonologically independent of the noun they follow. The noun itself is case marked and can also host additional clitics such as the coordination clitic-*n(o)*:

(3) Hinuq
karawat-mo-ƛ-no iškap-mo-ƛ-no geł ʒaši gebu goł
bed-OBL-SUB-and cupboard-OBL-SUB-and under much dust be
'Under the bed and under the cupboard there is much dust.'

Most postpositions can be used adverbially, and they can take spatial case suffixes. It can be hard to distinguish the postpositional use of an expression from its adverbial use. Thus, in (4a) *ƛ'ere* 'on', 'up' follows the noun 'mountain', which is marked by the SPR-Essive case. In contrast, in (4b) the same word *ƛ'ere* precedes the noun 'tree' to which the SPR-Directional suffix has been attached. At a first glance comparing (4a) and (4b) could lead to the conclusion that *ƛ'ere* occurs both as a postposition and as a preposition. However, examples like (4b) are quite rare. Furthermore, *ƛ'ere* can also appear in sentences that do not contain any nouns with the SPR suffix, and it can take directional case suffixes. Therefore, I argue that *ƛ'ere* has two different functions, as a postposition (4a) and as an adverb (4b). When used in motion events the spatial adverbs express the path (4b, 4c). Using the terminology of Talmy (1985) Hinuq and Bezhta can be characterized as satellite-framed languages, but a detailed account of motion events in both languages such as, e.g. the one given by Hoffmann (this volume) for Jaminjung is still lacking (see also Mosca, this volume, for another satellite-framed language, namely Italian).

(4) a. Hinuq
as xun-ƛ'o ƛ'ere goł
cloud mountain-SPR on be
'The cloud is over the mountain.'

b. *hado ƛ'ere ažey-ƛ'o-do Ø-ix-nos […] hayło-de-r*
he upwards tree-SPR-DIR I-get.up-ANT he.OBL-ALOC-LAT
Ø-aq'-o Ø-egwey xexbe
I-come-PRS I-small child(I)
'After he climbed the tree upwards, a small boy comes to him.'

c. *me* *di-de* *igo-r* *Ø-aq'e-yo…*
you.SG I.OBL-ALOC near-LAT I-come-COND
'If you (masc.) come near to me…'

3. Spatial cases and semantic typology of spatial relations

For the typology of spatial relations the 'topological pictures series', a collection of seventy-one pictures showing topological configurations, has been developed by the Language and Cognition Group of the MPI for Psycholinguistics (see Levinson and Wilkins 2006: 570–575). Informants were asked to give answers to where-questions. I interviewed four Hinuq speakers (two males and two females) and two Bezhta speakers (one female, one male) aged between 20 and 60 years. The result is a total of 375 phrases and clauses, whereby speakers used mostly simple copula constructions. Occasionally, the descriptions consist of phrases to which the copula could be added, or speakers used a positional verb instead of the copula. If the speakers gave more than one description for a context, the additional descriptions have been considered as well. The data were recorded and transcribed with the help of Hinuq and Bezhta speakers and later glossed by the author. Additionally, the available corpora of both languages have been used.

In the remainder of this section I describe and analyse the systems of location suffixes and postpositions in Hinuq and Bezhta. The main questions that I want to answer thereby are:

1. Which spatial cases and/or postpositions and which contexts cluster together?
2. Do (non-)cognate spatial cases in Hinuq and Bezhta occur in the same contexts?

3.1 Which spatial cases and which contexts cluster together?

In the descriptions of the topological pictures series almost all the cases were used. In the Hinuq data all location suffixes occur (i.e. CONT, IN, SUB, SPR, AT, ALOC, ILOC). In the Bezhta data all location suffixes apart from AT occur (i.e. CONT, IN, SUB, SPR, ALOC, NEXT, COMIT), which is not surprising at all since the AT-Essive fulfils mainly grammatical functions. Table 3 summarises the functions of the location suffixes in both languages.

Table 3. The function of spatial cases in Hinuq and Bezhta

	Hinuq		**Bezhta**
CONT	in an amorphous mass / areal	≠	location with contact, through X
IN	in a kind of container, various 'in'/'on' locations	≈	general 'in'-Location
SUB	under any kind of object	=	under any kind of object
SPR	on, above any object	=	on, above any object
ALOC	general location ('at', 'on', 'to', 'in') at an animate object	≈	predominantly animate location near or next to an object, governed by many postpositions ('in front', 'near' , 'side')
AT	general location, usually with contact	≠	animate location, including possession (no occurrence in the topological pictures series)
ILOC	general location at or near an inanimate object		#
NEXT	#		location at or next to an object (inanimate and animate), is governed by the postposition 'behind'
COMIT	#		location 'through', 'in' (e.g. mountains, forest, house) as well as comitative; is governed by the postpositions 'together', 'after/for'

As can be seen in this table, two of the spatial cases (SUB, SPR) have essentially the same function in both languages, which means that they were used in the same or almost the same contexts. In (5a, b) the Hinuq and Bezhta descriptions of one and the same context are given.[1]

(5) a. Hinuq
q'ure-ƛ *(geƛ)* *k'oħlo*
chair-SUB (under) ball
'a ball under a chair'

b. Bezhta
kirkat' *q'oo-ƛ* *ƛiyo* *gey*
ball chair-SUB under be
'A ball is under a chair.'

Two other cases (CONT, AT) have functions that diverge considerably between the two languages. CONT in Hinuq occurs when an object is located in an amorphous mass (e.g. water, flour, ashes, cf. (6a)) or in an area (e.g. Daghestan). In

1. Postpositions that are written in brackets have been used by at least one, but not by all speakers.

contrast, CONT in Bezhta indicates various locations that involve contact between the figure and the ground (6b), and the meaning 'through', whereby the ground is marked with CONT.

(6) a. Hinuq
łe-yi-ł *besuro*
water-OBL-CONT fish
'a fish in the water'

b. Bezhta
xäbä-la-ł *halałco* *gey*
leg-OBL-CONT shoe be
'The shoe is on the foot.'

The AT case in Hinuq denotes a general location of the figure near or at the ground, whereby figure and ground are usually in direct contact (12a). AT in Bezhta occurs only with animate figures in (metaphorical) spatial relations, therefore there are no examples in the data gathered from the topological pictures series. (7) is from the Bezhta corpus showing a comitative-like function of this case.

(7) Bezhta
hollo-qa *b-eɣ-al-na* *ilo-s* *häl*
they.OBL-AT III-fight-INF-and we.OBL-GEN1 power(III)
m-oq'oyq-aʔa-s
III-concern-NEG-PRS
'Our power is not enough to fight with/against them.'

Finally, two cases (IN, ALOC) are similar, but not identical in their functions in the two languages. IN in Hinuq is mainly used to refer to grounds that function like containers for the figure (8a), e.g. boxes, bags, houses, etc., but it is occasionally also used with other types of grounds. In Bezhta the meaning of IN is more general: it indicates all kinds of 'in' and 'inside' locations, independently of the type of ground, e.g. in (8b) the IN-Essive occurs in Bezhta, in Hinuq for the same example the CONT-Essive would be used.

(8) a. Hinuq
sumka-ma *(teł)* *goł* *t'ek*
bag-IN inside be book
'In the bag there is a book.'

b. Bezhta
Isa-s *q'äm* *hollo-l* *ẽxe-ʔ* *zoɣ-na* *gäʔä*
Isa-GEN1 head they.OBL-LAT river-IN find-CVB be.NEG
'They did not find Isa's head in the river.'

The ALOC cases in Hinuq and Bezhta are also quite similar to each other, but the Hinuq ALOC is somewhat more specific since it is more restricted to animate figures than the Bezhta ALOC.[2] This can be explained by the fact that Hinuq has another spatial case used mostly with inanimate figures (ILOC), which is not attested in Bezhta. Thus, Examples (9a, b) illustrate one and the same context for Hinuq (ILOC) and for Bezhta (ALOC).

(9) a. Hinuq
ɣwe-yi-žo *buƛe-ho* *ɣwe*
dog-OBL-GEN2 house-ILOC dog
'a dog next to a dog's house'

b. Bezhta
hinila *biƛo-doy* *wo* *gey*
REFL.GEN2 house-ALOC dog be
'The dog is next to its house.'

In addition to ALOC Bezhta has two more cases, NEXT (12b) and COMIT (10), with similar meanings. They often occur in combination with postpositions:

(10) Bezhta
biƛo-ɣoy *sõːyicʼo* *kalo*
house-COMIT around fence
'a fence around a house'

It is important to take into account the fact that for each location marker there are some 'core contexts', where all or almost all speakers agreed, and borderline contexts, where various markers where used (e.g. shoes 'at' the foot or shoes 'on' the foot):

(11) a. Hinuq
beƛe-de *aldoɣo* *goɬ* *aže*
house.OBL-ALOC in.front be tree
'In front of the house there is a tree.'

b. *buƛe-ho* *(igo)* *aže*
house-ILOC (near) tree
'a tree at the house' or 'a tree near the house'

2. In the Hinuq data of the topological pictures series the ALOC occurs four times, but only with one speaker, who uses it mostly where the other speakers use the ILOC. In fact, in elicitation speakers allow, but rarely volunteer, ALOC and ILOC cases in roughly the same contexts. In my Hinuq corpus, however, ALOC occurs primarily with animate and ILOC with inanimate nouns.

The borderline contexts are especially those contexts that are not canonical basic locative constructions. There are many reasons why a basic locative construction can be non-canonical: the figure may be relatively large in comparison with the ground, or the spatial relation may be atypical, or the figure may be (almost) in a part–whole relation with the ground, or figure and/or ground do not belong to the typical, daily experiences of the speakers (e.g. stamps on letters; see Levinson and Wilkins (2006: 515) for a number of factors that have an impact on whether a spatial configuration is a good candidate for a basic locative construction or not).

3.2 Which postpositions and which contexts cluster together?

Only in a minority of utterances were postpositions used: of the 375 phrases and clauses 110 contain postpositions. There are three contexts where many or even all of the speakers used postpositions. First, for a number of contexts there are no spatial cases with the appropriate meaning, e.g. 'behind', 'in front of', 'around' (12a, b). In these contexts spatial cases with rather unspecific meanings plus postpositions with more precise meanings occur:

(12) a. Hinuq
bantik *r-ece-s* *čiraq-mo-qo* *soťir*
ribbon(V) V-tie-WPST lamp-OBL-AT around
'A ribbon is tied around the candle.'

b. Bezhta
qʾoo-ɣa *müɣättää* *öžö* *gey*
chair-NEXT behind boy be
'A boy is behind the chair.'

Second, the meaning of the spatial case is not specific enough. Thus, postpositions are used to contrast similar contexts. For example, the Bezhta postposition *ƛʾodo* means 'on', 'up', 'upwards', and 'above'. In the contexts with the meaning 'on', where figure and ground are assumed to be in contact, the SPR-Essive (13a) alone is used. In contrast, when the meaning 'above' is expressed, where there is no contact between figure and ground, the postposition *ƛʾodo* in combination with a spatial case (usually the SPR-Essive, but it might also be another case) occurs (13b).

(13) a. Bezhta
tʾek *ãco-ƛʾa* *gey*
book shelf-SPR be
'The book is on the shelf.'

b. *istoli-ya-doy* / *istoli-ya-ƛʾa* *ƛʾodo* *lampočka* *gey*
table-OBL-ALOC / table-OBL-SPR on lamp be
'The lamp is over the table.'

Third, when the context is less typical, then there is a higher probability that postpositions are employed. For instance, a necklace is typically worn around the neck, with contact to the neck, therefore no postpositions were used (16a, b), but a ribbon might be attached to a candle in various ways, thus postpositions occur (12a).

The contexts in which most often postpositions occurred are: 'above', 'around', 'behind'/'in front'/'near', and 'under'. In many contexts no speakers use postpositions, e.g.

(14) Bezhta
öždi-lä *sik'a-ʔ* *papiroz* *gey*
boy.OBL-GEN2 mouth.OBL-IN cigarette be
'In the boy's mouth is a cigarette.'

However, according to my informants, in contexts describing spatial relations postpositions can in principle always be added to nouns marked with spatial cases in order to clarify the meaning. It repeatedly happened that speakers uttered first clauses without postpositions and then repeated the clauses with postpositions. Thus, example (15a, b) shows two phrases uttered by one and the same speaker:

(15) a. Hinuq
ɣwe *buƛé* *teł* *zonzo*
dog house.IN in REFL.GEN2
'a dog in its house'

b. *ɣwe* *zonzo* *buƛé*
dog REFL.GEN2 house.IN
'a dog in its house'

3.3 Do (non-)cognate spatial cases in Hinuq and Bezhta occur in the same contexts?

As described in Subsection 3.1 and summarised in Table 3, some cognate spatial cases occur in the same contexts. Especially SPR ('on') and SUB ('under') are functionally very similar in both languages. IN and ALOC are at least partially similar. In contrast, CONT and AT differ considerably in their function. In Bezhta, ALOC, NEXT, and COMIT resemble each other, but ALOC is more specific and less frequent than NEXT and COMIT. In Hinuq, ILOC and ALOC resemble each other, but their distribution is regulated by animacy.

When looking at non-cognate markers in both languages we find a number of functional correspondences. The most important (i.e. comprising the most contexts) is clearly between the Hinuq AT and Bezhta CONT, which are functionally

very similar to each other, apart from the fact that Bezhta CONT can also mean 'through' (see also Table 3). For example, a typical context for the Hinuq AT suffix and the Bezhta CONT suffix is illustrated in (16a, b). Other contexts are 'shoe on the foot' (6b), 'picture on the wall', 'flag on the pole', etc.

(16) a. Hinuq
moc'o-qo kur-iš goł aɣwe-be
neck.OBL-AT throw-RES be bead-PL
'There is a necklace around the neck.'

b. Bezhta
biła-ł aboc-a gey
neck.OBL-CONT bead-PL be
'There is a necklace around the neck.'

Other important correspondences can be established between Hinuq ILOC and Bezhta ALOC (9a, b), between Hinuq ILOC and Bezhta NEXT and between Hinuq AT and Bezhta IN (17a, b).

(17) a. Hinuq
qešu-qo ak'we-be
wall-AT nail-PL
'nails in the wall'

b. Bezhta
yõso-ʔ muqʾo gey
wall-IN nail be
'There is a nail in the wall.'

A convenient way of visualising the functional similarities of (non-)cognate suffixes is by using multidimensional scaling. Figures 1 and 2 show multidimensional plots of dissimilarity matrixes for all given topological pictures (partially labelled with numbers for the respective contexts). In order to draw these pictures, an 'average' dissimilarity is computed for each pair of the contexts, whereby a small number of contexts have been left out, leading to sixty-four contexts instead of seventy-one.[3] As an example of such a computation, the Hinuq descriptions of the contexts 35 (a band aid on a leg) and 44 (a picture on a wall) are compared in Table 4. As the table shows, one of the four speakers gave two answers, which are both taken into consideration.

3. These are the contexts that do not represent canonical basic locative constructions. Therefore, frequently speakers did not give any answer or the answers of all speakers were very heterogeneous.

Table 4. Comparison of Hinuq descriptions of contexts 35 and 44

Context	Speaker 1		Speaker 2		Speaker 3		Speaker 4	
	answ. 1	answ. 2	answ. 1	answ. 2	answ. 1	answ. 2	answ. 1	answ. 2
35	SPR	–	AT	–	AT	SPR	AT	–
44	AT	–	AT	–	SPR	AT	SPR	–

For each pair of contexts all variations are determined, e.g. combining all first answers (answ. 1) of speaker 1 with all first answers of speaker 2 gives us the first variation for both contexts. Now we want to compare the contexts by comparing all variations to each other and then calculate the average distance out of the distances for each single variation. For instance, for the first variation we compare the number of occurrences of AT and SPR in both contexts, whereby we can see that context 35 leads to more AT answers then context 44. The formula by which the distance (0.125) between the two contexts for the first variation is calculated is given in the second cell of the bottom line in Table 5. This must be done for all contexts. As we can see after a brief look at Table 5, the third and the fourth variations show a complete similarity (i.e. identity) of case suffixes used in both contexts, which means that the distance between the contexts is 0.0. Finally, we calculate the average of all distances, which is 0.0625 (= (0.125 + 0.125 + 0.0 + 0.0)/4). This is the average distance of these two contexts in Hinuq. It means that both contexts are relatively similar to each other.

Table 5. Comparison of variations among Hinuq descriptions of contexts 35 and 44

	variation 1	variation 2	variation 3	variation 4
context 35	SPR, AT, AT, AT	SPR, AT, SPR, AT	SPR, AT, SPR,AT	SPR, AT, AT, AT
context 44	AT, AT, SPR, SPR	AT, AT, AT, SPR	AT, AT, SPR, SPR	AT, AT, AT, SPR
distance	0.125	0.125	0.0	0.0
note	((3 AT – 2 AT)/2 + (2 SPR – 1 SPR)/2)/8		((2 AT – 2 AT)/2 + (2 SPR – 2 SPR)/2)/8	

Based on a table with all of these pairwise comparisons, multidimensional scaling attempts to locate all the contexts in a two-dimensional display in such a way that the distance between each two contexts in the display matches the computed dissimilarities as closely as possible. In this manner for both Hinuq and Bezhta a plot showing sixty-four (partially overlapping) dots is drawn (Figure 1, 2). Each dot represents one context. The closer two dots are, the more similar the two contexts are. Contexts that are identical are represented by one dot only. I have left out the numbers for most of the contexts in order to simplify the picture. But, as we can see in Figure 1, the dots for the context 35 and 44 are quite close to each other.

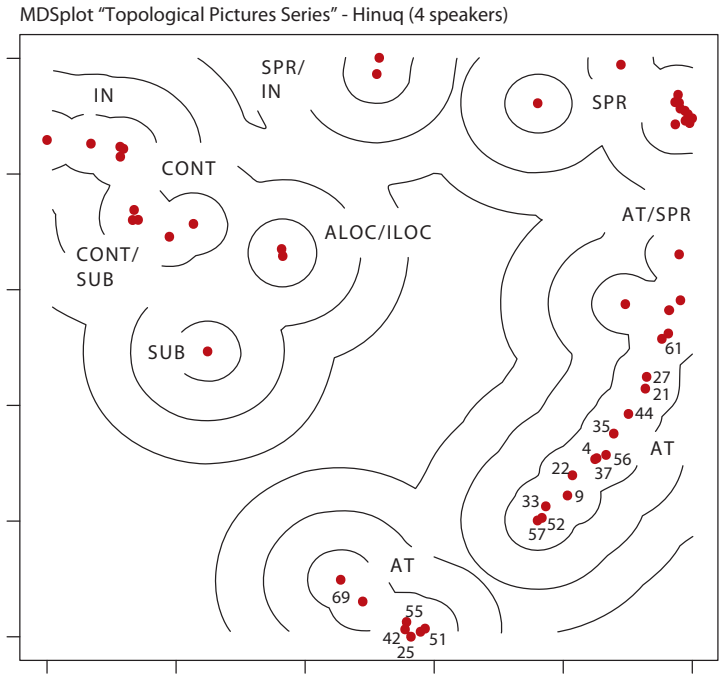

Figure 1

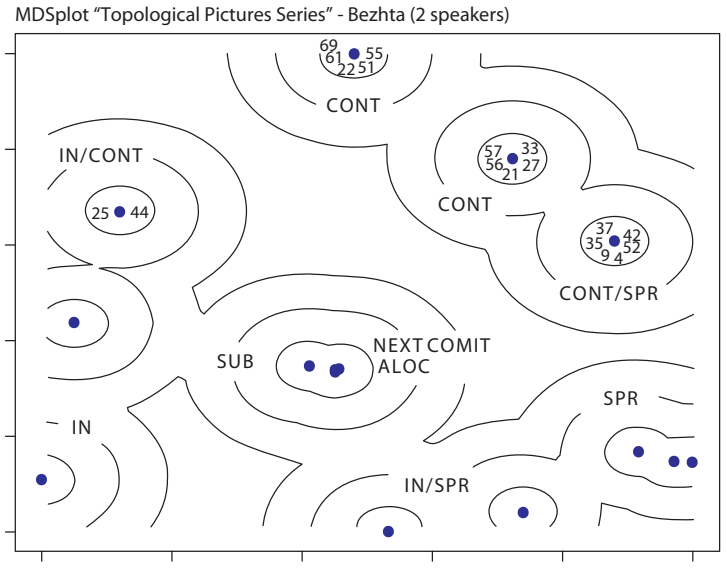

Figure 2

In order to show the variation between the languages, lines surrounding those contexts that are encoded identically or very similarly are drawn. This approach follows the tradition of drawing semantic maps (Haspelmath 2003). The lines in both maps are automatically computed. In this way, we ensured that the drawing of the lines follows the same rules in both maps. The method for drawing the lines is as follows: First, assign each dot (context) on the map a height of one. Then construct a cone around each dot at height zero, whereby all cones have the same radius. Cones that are close to each other (because their peaks are close to each other) merge into one big geometrical object. Now draw contour lines around all cones at three different heights. These are the lines shown in the figures. The lines show more clearly than the dots alone which contexts are similar, since dots that are relatively far away from each other can also be enclosed by one and the same line.

Note that the Hinuq picture is fuzzier because more data has been used. The pictures show different clusters of case suffixes in the two languages, but when we take into account the functional resemblances of non-cognate suffixes then the two pictures are quite similar to each other. For instance, the core contexts for Hinuq AT and Bezhta CONT are roughly identical. Similarly, Hinuq AT and Bezhta CONT cluster together with SPR. Each language has a few core contexts for SPR, which especially in Hinuq are more closely together than for AT (i.e. typical SPR contexts are easily identified by the speakers). The core contexts for SPR in the two languages largely overlap. Furthermore, SPR and IN show an overlapping in both Hinuq and Bezhta. IN has a few core contexts and shares some contexts with CONT in both languages. In Hinuq and Bezhta, SUB occurs only in a very restricted number of contexts. Interestingly, these contexts are grouped together or near to the 'near'/'next' suffixes. I do not have an explanation for this. Finally, the 'near'/'next' suffixes (ALOC, ILOC in Hinuq; NEAR, COMIT, ALOC in Bezhta) come out together.

At least some of the correspondences can be explained diachronically. That is, the AT case had originally most probably an exclusive or at least predominantly spatial function in both languages. In the course of time it took over more and more non-spatial functions, whereby in Hinuq it preserved at least part of its spatial meaning. In Bezhta this development lead to the extreme case that AT is now used almost exclusively in non-spatial functions, with only a few exceptions (cf. (7)). Its former spatial meaning has been taken over by CONT, which explains the correspondences between Hinuq AT and Bezhta CONT. At the same time Bezhta IN in addition to its original meaning ('location in a kind of container') has taken over the meaning of CONT leading to a general 'in' meaning (cf. (8b), (14)). In some instances, Bezhta IN has also directly taken over original AT functions (e.g. compare (17a) and (17b)).

4. Temporal usages of the spatial cases

In order to extend the picture of the spatial cases somewhat it is interesting to look at the temporal usages of the spatial cases, because many, but not all, spatial cases also express temporal meanings when added to nouns, adverbs, or numerals. The suffixes that are productively used in the expression of temporal relations are IN and SPR in both languages and additionally CONT in Hinuq. Only the SPR-Essive has roughly the same function in the two languages, where it expresses time points, e.g.

(18) a. Hinuq
de iɬra-ƛ'o sasaqo y-ixxo
I six.OBL-SPR in.the.morning II-get.up.PRS
'I (fem.) get up at six o'clock in the morning.'

b. Bezhta
do iɬen-ƛ'a xisƛ'a äɣiʔ-ca
I six.OBL-SPR in.the.morning stand.up-PRS
'I get up at six o'clock in the morning.'

The function of both CONT and IN in Hinuq resembles the function of IN in Bezhta: all cases mainly refer to time spans like 'hour', 'year', 'summer', 'night', etc.:

(19) a. Hinuq
hezzo ʕazal-no ʕač'ino bišon-no q'ono qu-no oc'eno
then 1.000-and nine 100-and two twenty-and ten
oƛno eƛa ƛeba-ɬ gučibu-s obratno aƛa-do
seven ORD year.OBL-CONT resettle-WPST back village.IN-DIR
'In the year 1957 they resettled us back in the village.'

b. Bezhta
šibab ƛi-ʔ aprel-li-ʔ
every year-IN April-OBL-IN
'every year in April'

A number of spatial cases occur only with a very small number of lexemes and express temporal meanings which can be said to be lexicalised (Hinuq AT, ILOC, e.g. *hasaqo* 'in the morning'; Bezhta NEXT and CONT, e.g. *ɬina wodoɣa müɣättää* 'after five days').

All other spatial cases (SUB and ALOC in both languages, AT, NEXT, and COMIT in Bezhta) completely lack a temporal usage.

To summarise, although the temporal functions of the location suffixes are more restricted then the spatial functions, both domains show the same functional

resemblances. It is not very surprising that especially those cases that mean 'in' and 'inside' occur in the expression of temporal relations because the metaphorical extension of the spatial location of a figure 'in' the ground to an event 'in' time is cross-linguistically rather common (cf. Langacker (this volume) and Wallington (this volume) for conceptual symmetries in the linguistic expression of space and time).

5. Conclusions

In this chapter, I have offered an overview of the main linguistic means used in Hinuq and Bezhta for the lexicalisation of space. In both languages spatial configurations are expressed mainly in the nominal complex (case-marked noun and possibly postpositions). Some of the spatial cases have a more specific meaning (e.g. SPR, SUB), others have a less specific meaning (e.g. ALOC vs NEXT vs COMIT in Bezhta). Concepts that are relevant for the expression of spatial configurations in Hinuq and Bezhta are (i) the position, (ii) contact, and (iii) animacy. Basic positions like 'on', 'under', 'in', 'inside', 'next to', and 'near' can be expressed by spatial cases alone. Positions of higher complexity, e.g. 'behind', 'in front of', 'on the side', 'in the middle', 'on the top', etc., need additional postpositions or spatial nominals. Contact, whether vertical, horizontal, or involving containment, is expressed by a separate case in each language (AT in Hinuq, CONT in Bezhta). Finally, animacy can be partially expressed, especially in Hinuq (ILOC vs ALOC), but together with a rather unspecific location.

A fairly brief look at the expression of temporal relations revealed that a limited set of the spatial cases occur also when talking about time. In the future it would be interesting to look in more detail at temporal expressions, including spatial postpositions used for the expression of temporal relations and temporal adverbs or nouns, and their relation to the spatial domain.

The main contribution of this paper to the investigation of the linguistic expression of time and space is the employment of multidimensional scaling to visualize the functional ranges of different linguistic forms. The resulting maps are similar to the more traditional method of drawing semantic maps. But multidimensional scaling allows drawing more objective maps because the distances between the items on the map directly reflect the similarity of their functions. All maps drawn with this method use the same algorithm and the wave-like lines capture more distant similarities.

Since the data used for this study come mainly from the topological pictures series, mainly those topological configurations actually occurring in the description of the pictures found their way into this study. Therefore, various interesting aspects of how space and motion through space are coded in Hinuq and Bezhta

have not been captured, e.g. a number of minor spatial cases not listed in Tables 1 and 2, some postpositions and all orientation markers besides the Essive, spatial nominals, and positional verbs. These topics will be the subject of future research. For instance, it is possible to conduct newly developed experiments such as those described by Maillat (this volume) with Bezhta and Hinuq speaker. Furthermore, his cross-linguistically applicable pragmatic model that allows the disambiguation of semantically underdetermined spatial expression could be applied to those Bezhta and Hinuq cases that are difficult to differentiate.

Abbreviations

I–V	genders	NEG	negation
ANT	anterior converb	OBL	oblique stem marker
CVB	converb	ORD	ordinal numeral
COND	conditional	PL	plural
DIR	directional	PRS	present
ERG	Ergative	PTCP	participle
GEN1	first Genitive	REFL	reflexive
GEN2	second Genitive	RES	Resultative participle
INF	infinitive	WPST	Witnessed past
LAT	lative		

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CHAPTER 2

Pragmatically disambiguating space

Experimental and cross-linguistic evidence*

Didier Maillat
University of Fribourg

This chapter addresses two points of a research agenda set by Levinson and Wilkins (2006) for the analysis of spatial information processing in natural languages. First, a pragmatic model is proposed that relies mostly on general pragmatic principles to inferentially disambiguate semantically underdetermined spatial expressions. Second, this model is claimed to be cross-linguistically applicable and leads to a universal generalisation about the pragmatics of spatial frames of reference. In the second part, a report is provided of an experimental design in support of the theoretical points raised before. Finally, cross-linguistic evidence from Tzeltal is proposed to back the generalisation argued for. To conclude, the evidence presented is taken to strongly support the predictions made by a pragmatic model of spatial language. Such a model offers a fresh take on the central question of universality vs. linguistic diversity in spatial language as it uses semantic and pragmatic universals to explain linguistic variation.

Keywords: directional, disambiguation, frame of reference, pragmatic inference, spatial information processing, Tzeltal

1. Introduction

This paper addresses the key issues of universality vs linguistic variation and relativity in spatial language, as it argues that, paradoxically, linguistic diversity can sometimes emerge in natural languages as a result of universal principles. I contend in this chapter that the interaction between simple, universal semantic meanings and standard pragmatic disambiguation processes can rather unexpectedly give rise to a form of cross-linguistic variation in the language of space.

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