

# Space (and Time) for Culture

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Space is a fundamental domain for cognition, and research on spatial perception, orientation, referencing, and reasoning addresses core questions in most of the disciplines that make up the cognitive sciences. Consequently, space represents one of those domains for which various disciplinary interests overlap to a substantial extent. For instance, the question of whether and how spatial cognition and language interact has been one of the core questions since early on (e.g., Clark, 1973; Miller & Johnson-Laird, 1976), and yet, consensus between psychologists and linguists is difficult to achieve (e.g., Li & Gleitman, 2002, vs. Levinson et al., 2002). Perhaps most controversial in this dispute is the extent to which spatial cognition is culturally variable (for linguistic variability, see also Evans & Levinson, 2009, and comments there-in).

Expanding the space of cognitive science research to ‘non-standard’ cultures (Henrich et al., 2010; Medin et al., 2010) is thus crucial for the advancement of cognitive science. For this very reason, cross-disciplinary collaboration would be particularly productive in finding and addressing new questions. For instance, can we find coherent frameworks for describing both spatial and temporal referencing, what factors affect intra- and intercultural variance in this regard, and what does gesture tell us about such conceptions? How are landscapes linguistically categorized? Does the world look different depending on how one moves through it? And how do spatial conceptualizations help to structure other core domains of culture?

In order to answer these questions and to capture and disentangle the intricate relationship of cultural experiences and representations, linguistic notions and conventions, and cognitive processing, this symposium brings together researchers from different disciplinary backgrounds to present new theoretical frameworks and empirical data, thereby drawing on findings and insights from anthropology (Bender, Bennardo, Istomin, Le Guen), linguistics (Bennardo, Burenhult, Tenbrink), and psychology (Beller, Bender, Hüther). Based on their own research (Bender, Beller & Bennardo, 2010; Burenhult & Levinson, 2008; Istomin & Dwyer, 2009; Le Guen, in press; Tenbrink, 2011), the presenters in this symposium will also argue why and how cross-cultural (and

cross-disciplinary) research can contribute to a more comprehensive understanding of spatial and temporal cognition.

## A basic framework of reference frames of space and time in language

Thora Tenbrink

This contribution provides a categorical overview of reference frames for space as well as time, building on and systematically extending earlier accounts. A consistent framework using simple spatial models is proposed, which integrates a range of previously underexplored complexities with respect to spatial language used in both static and dynamic settings, as well as aspects peculiar to time. The approach highlights the distinction between conceptually similar (spatial and temporal) structures reflected in language on the one hand, and metaphorical transfer of clearly spatially based concepts on the other. While the framework is based on English, it provides a toolbox of basic roles and relations that is suitable for representing abstract relational concepts conveyed by linguistic descriptions across discourse contexts and languages. It may thus serve as a framework for comparing lexicogrammatical as well as pragmatic structures of language in the ubiquitous domains of space and time. This will be illustrated by a range of cross-linguistic examples.

## What’s going on in my back? Spatial referencing in four languages

Lisa Hüther, Sieghard Beller & Andrea Bender

Research on spatial referencing has primarily focused on *frontal* constellations, that is on constellations in front of a person. How *dorsal* constellations in the person’s back are treated has been a matter of speculation rather than empirical investigation. The prevailing hypothesis holds that people turn around to constellations in their back and then employ the preferred frame of reference. In a recent study we compared frontal and dorsal referencing and investigated the de-

gree of intra- and intercultural variation in German, English, Chinese, and Tongan. Our findings reveal a heterogeneous pattern of preferences, both across languages and conditions.

### **The conception of space and time among the Yucatec Maya (Mexico): Insights from gesture**

Olivier Le Guen

As an abstract conceptual domain, time is hard to be conceptualized on its own, and is thus often structured through mapping from a domain grounded directly in experience. A good candidate for this mapping is space. Cross-cultural studies have shown that time is mapped onto space in two ways: (1) thought metaphors in language and/or (2) the preferred spatial Frame of Reference (FoR). To examine how the domains of space and time interact in Yucatec Maya, I will look at the conception of space (specifically the preferred FoR) and the conception of time in language and culture. I will show that gesture can help us understand how these domains are conceptualized and map each other. Yucatec Maya provides a new case for space-to-time mapping never described before where time flow is conceptualized as cyclical and time gesture production is constrained by the use of the geocentric FoR, inhibiting the use of a left-right or front-back time line.

### **Language, cognition and landscape: Exploring cross-cultural variation in the representation of large-scale space**

Niclas Burenhult

From the linguist's point of view, the geophysical environment is virtually unexplored. Yet it is a fundamental spatial domain with enormous potential for influence on the discipline (Burenhult & Levinson, 2008). How do languages select geographic objects to be labelled? Are there universal categories? What's the relationship between common and proper nouns? Which are the ontological principles of landscape categories? How and why do categorial strategies vary across languages and speakers? Linguistic attention to the domain is also certain to unleash a variety of new questions and perspectives of inquiry in other disciplines, like anthropology and environmental psychology. Drawing on first-hand data from several diverse languages, this talk outlines the main parameters of cross-linguistic variation in geographical ontology and proposes a set of key topics for future linguistic inquiry into the landscape domain.

### **Distributed spatial cognition and orientation methods among nomadic and settled groups in the Taz tundra of northern Russia**

Kirill V. Istomin

In order to understand how a specific way of life may influence spatial cognition, I investigate differences in spatial perception, spatial orientation, and spatial performance among three groups in the Taz Tundra (north-western Siberia) that differ in their degree of mobility and mode of engagement

with space: helicopter pilots, nomadic reindeer herders, and semi-nomadic hunters and fishermen. The results suggest that human spatial cognition and orientation in space can be best understood as products of a cognitive system including mental modes of spatial representation and reckoning along with objects and phenomena of the environment, such as animals (reindeer), means of transport, wind, and snow conditions. The forms of distributed spatial cognition attributed here to each group investigated account for the observations that members of each group experience space, solve spatial cognitive tasks, and enact behaviors in space differently.

### **From Space in Time to Space in Culture**

Giovanni Bennardo

The last decade has seen an ever increasing accumulation of evidence for the replication of spatial configurations into those about time. I propose to go beyond this newly acquired realization and point toward an even larger impact that preferential organizations of spatial relationships have on other domains of knowledge. Relevantly, some of these domains are at the core of what one would call 'culture', e.g., religion, kinship, and social relationships. The data supporting my proposal come from my extensive research in the Kingdom of Tonga, Polynesia.

### **References**

- Bender, A., Beller, S., & Bennardo, G. (2010). Temporal frames of reference: Conceptual analysis and empirical evidence from German, English, Mandarin Chinese, and Tongan. *Journal of Cognition and Culture*, 10, 283-307.
- Burenhult, N., & Levinson, S.C. (2008). Language and landscape: A cross-linguistic perspective. *Language Sciences*, 30, 135-150.
- Clark, H.H. (1973). Space, time, semantics, and the child. In T.E. Moore (Ed.), *Cognitive development and the acquisition of language* (pp. 27-63). New York: Academic Press.
- Evans, N., & Levinson, S.C. (2009). The myth of language universals: Language diversity and its importance for cognitive science. *Behavioral and Brain Sciences*, 32, 429-492.
- Henrich, J., Heine, S.J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33, 61-135.
- Istomin, K.V., & Dwyer, M.J. (2009). Finding the way: A critical discussion of anthropological theories of human spatial orientation with reference to reindeer herders of Northeastern Europe and Western Siberia. *Current Anthropology*, 50, 29-49.
- Le Guen, O. (in press). Handling frames of reference: The division of labor between speech and gesture in Yucatec Maya. *Cognitive Science*.
- Levinson, S.C., Kita, S., Haun, D.B.M., & Rasch, B.H. (2002). Returning the tables: Language affects spatial reasoning. *Cognition*, 84, 155-188.
- Li, P., & Gleitman, L. (2002). Turning the tables: Language and spatial reasoning. *Cognition*, 83, 265-294.
- Medin, D.L., et al. (2010). Diversity in the social behavioral and economic sciences. *White Paper* submitted to NSF BSE.
- Miller, G.A., & Johnson-Laird, P.N. (1976). *Language and perception*. Cambridge, MA: Harvard University Press.
- Tenbrink, T. (2011). Reference frames of space and time in language. *Journal of Pragmatics*, 43, 704-722.