Commentary

Holger Diessel

Is there a deictic of frame of reference?

The chapters by Cienki, Fehrmann, and Bohnemeyer and Tucker are concerned with very different aspects of language and space; but there is one central theme that is addressed in all three chapters: the use of spatial frames of reference. This is one of the most hotly debated topics in current linguistic and psycholinguistic research on space in language and cognition (cf. Levinson 1996, 2003; Pederson et al. 1998; Li & Gleitman 2002; Levinson et al. 2003; Majid et al. 2004; Levinson & Wilkins 2006; Li et al. 2010; Danziger 2010).

A frame of reference is a coordinate system that involves at least the following conceptual constituents: figure, ground, origin, and angular specifications. The figure is the element that the speaker seeks to locate in space; the ground provides a reference point with respect to which the figure is located; the origin is the point where the axes of the frame meet; and the angular specifications indicate the direction or angle between figure and ground (or figure, ground, and anchor). In addition, there is a viewer or viewpoint, which may or may not be identical with the origin of the frame of reference (cf. Levinson 1996, 2003). Some studies also use the notion of a conceptual anchor to characterize a spatial coordinate system (cf. Bohnemeyer and Tucker this volume); but the anchor is usually represented by the same entity as the origin – it is the zero point of the search domain form ground to figure (cf. Danziger 2010: 168).

For instance, in the sentence *The man stands in front of the house* ›the man‹ is the figure and ›the house‹ is the ground. The anchor/origin can have two interpretations. If we assume that the house has an inherent front-back orientation and the location of the figure is indicated with respect to the inherent front side of the house, the origin is embedded in the ground, i.e. the house is not only the ground but also the anchor/origin. But if we assume that the house does not have an inherent front-back orientation and the location of the figure is indicated with respect to the speaker's location, the origin is determined by the speaker's body and origin and ground are represented by different entities. Note that in the latter interpretation the ground has secondary coordinates that are mapped from the speaker, i.e. the anchor/origin,

onto the house through 180 degrees rotation (cf. Levinson 2003: 44–5). Angular specifications are provided by the relational term *in front of* in combination with figure and ground, and the viewpoint is determined by the speaker (in both interpretations).

Traditionally, three basic types of frames of reference are distinguished based on the nature of the origin/anchor: (i) the viewer-centered (or deictic) frame of reference in which the origin is determined by the speaker (or some other person), (ii) the object-centered (or intrinsic) frame of reference in which the origin is determined by an object (or person) with an inherent orientation, and (iii) the environment-centered (or extrinsic) frame of reference in which the origin is provided by geographical landmarks or cardinal directions on the ground (cf. Carlson-Radvansky & Irwin 1993; Fillmore 1997).

Most research on space in language and cognition has emphasized the importance of the viewer-centered or deictic frame of reference (e.g. Miller & Johnson-Laird 1976; Lyons 1977); but recent data from linguistic fieldwork and psycholinguistic experimentation suggest that the environment-centered frame of reference may be more important than previously assumed (see Bohnemeyer and Tucker in this volume). In English (and many other European languages), there is a strong tendency to describe space from the speaker's viewpoint; but in other languages environment-centered descriptions of space are sometimes very common (e.g. in Tzeltal and Guugu Yimithirr). In fact, some of these languages do not allow for viewer-centered descriptions such as *The man is to the left of the tree*, using instead geocentric descriptions such as *The man is north of the tree* (cf. Brown & Levinson 1993).

These findings have led Levinson and colleagues to question some common assumptions about semantic universals of space. In particular, they have challenged the view that people of all cultures and speakers of all languages are naturally inclined to describe spatial scenes from an egocentric perspective based on the speaker's bodily coordinates. It seems that there is more variation in this domain than linguists and cognitive scientists working on English (and other familiar languages) commonly assume (see Bohnemeyer and Tucker this volume).

Moreover, Levinson proposed a new typology of frames of reference that disregards the distinction between a deictic and non-deictic anchor (or origin) and emphasizes instead the importance of the »logical structure« of spatial scenes for the classification of coordinate systems. This new typology comprises three types of frames, i.e. the relative frame of reference, the intrinsic frame of reference, and the absolute frame of reference, that are defined by the number of arguments they include and their properties under

rotation but for which the contrast between a deictic and non-deictic anchor/origin is irrelevant. As can be seen in examples (1) to (6) (adopted from Levinson 1996/2003), all three frames can have a deictic or non-deictic interpretation:

(1)   The ball is in front of the tree. [from the   [relative + deictic]
      speaker's perspective]
(2)   For John the ball is in front of the tree.   [relative + non-deictic]
(3)   The ball is in front of me.   [intrinsic + deictic]
(4)   The ball is in front of the chair.   [intrinsic + non-deictic]
(5)   The ball is north of me.   [absolute + deictic]
(6)   The ball is north of the chair.   [absolute + non-deictic]

Of course, the default interpretation of the relative frame of reference is deictic, and the default interpretation of the two other frames is non-deictic; but the examples in (1) to (6) show that the contrast between a deictic and a non-deictic anchor/origin does not establish categorical boundaries between the three types of frames, leading Levinson to the following conclusion:

> The phrase ›deictic frame of reference‹ is therefore, despite its prevalence, conceptual nonsense. Specifications of the origin of the coordinate system within a frame of reference is one way in which deixis contributes to spatial descriptions of all types. [Levinson 2003: 71]

In what follows I argue that while this research uncovered some surprising cross-linguistic differences in the encoding of space, it focuses too narrowly on a few spatial terms and disregards the most important class of expressions that presupposes a frame of reference: spatial adverbs such as *here* and *there* and demonstrative pronouns such as *this* and *that*. Since *here/there* and *this/that* denote a parallel semantic contrast and are often etymologically related, I include them in one class, to which I refer by the notion of demonstrative (or spatial deixis) (for a more detailed justification of this analysis see Diessel 1999: chap 4).

   The bulk of current research on linguistic frames of reference is concerned with expressions that correspond to English *left* and *right* or, less frequently, *in front of* and *behind* and a few geographical terms (e.g. *north*, *south*, *uphill downhill*) which speakers of languages like Tzeltal and Guugu Yimithirr employ in situations in which English speakers would use the above mentioned terms; but there are many other expressions to indicate spatial relationships: nouns denoting places (e.g. *Hamburg, Lake Erie*), adverbs, particles and adpositions indicating contact, adhesion and containment (e.g. *in, on, at*),

verbs and particles expressing motion (e.g. *come, go, move away*), and demonstratives (e.g. *here, there, this, that*).

According to Levinson (2003: 69ff.), all of these expressions are irrelevant for the analysis of frames of reference because they do not involve a coordinate system for spatial orientation; but this assumption is problematic when we consider the use and semantic interpretation of demonstratives.

Like *left* and *right* and *in front of* and *behind*, expressions such as *this* and *that* and *here* and *there* specify a spatial relationship between figure and ground, but they do this in a different way. Relational expressions such as *left* and *right* ›describe‹ spatial relations between a lexical figure and a lexical ground, whereas demonstratives indicate spatial figure-ground relationships through ›pointing‹. In a sentence such as *The ball is (over) there*, the demonstrative *there* refers to the figure (i.e. ›the ball‹) and entails the deictic center as a reference point, i.e. the deictic center is the implicit ground. The deictic center also provides the viewpoint of the scene; but what seems to be missing is an angular specification of the direction between figure and ground (or figure, ground, and viewpoint).

In contrast to expressions such as *left* and *right* and *in front of* and *behind*, demonstratives usually do not encode directional information (but see Diessel 1999: 42–7 for languages in which demonstratives *do* provide this information). This is why Levinson excludes demonstratives from the analysis of frames of reference (cf. Levinson 2003: 70–1). But, as Bühler (1934) and many other researchers of deixis have pointed out, demonstratives are commonly accompanied by pointing gestures that specify the search domain (cf. Bühler 1934; Eriksson 2008; see also Levinson 2003: 70). Together with other nonverbal means of reference, such as eye gaze and body posture, deictic pointing gestures constitute a coordinate system that is indispensible for the semantic interpretation of demonstratives. This is why Bühler characterized demonstratives (and other deictics) as »vectors« that speakers use to direct the hearer's attention in a »coordinate system of subjective orientation« (Bühler 1934: 202). Levinson excludes demonstratives from the analysis of frames of reference because the angular specifications are not verbally encoded; but this decision is unjustified if we seek to analyze the cognitive foundations of spatial language. Unlike *left* and *right*, demonstratives involve a ›cross-modal coordinate system‹ that crucially relies on nonverbal means; but without such a coordinate system demonstratives would not be interpretable.

Now, if we accept this argument and include demonstratives into the analysis of frames of reference, Levinson's above cited claim that the notion of a deictic frame of reference is »conceptual nonsense« is no longer tenable.

In contrast to relational expressions such as *left* and *right* and *in front of* and *behind*, which may or may not involve the deictic center as a particular point of reference, demonstratives are generally anchored by the origo. Of course, the deictic center can be transposed from the speaker to another person (cf. Bühler 1934) or to a point in the ongoing discourse (cf. Diessel 2006); but in their basic use demonstratives are generally interpreted relative to the deictic center, i.e. the speaker's bodily coordinates at the time of the utterance, suggesting that the deictic center is a defining property of this frame. In fact, I suggest that the deictic frame of reference that underlies the semantic interpretation of demonstratives is the most basic coordinate system of both language and cognition.

As I have argued in several places (cf. Diessel 1999a, 2006, in press), demonstratives constitute a unique class of linguistic expressions that serve a foundational function in communication, language, and cognition. Unlike most other closed-class expressions, demonstratives occur in languages across the world and are very frequent in face-to-face conversation. They are older than other function morphemes and generally non-derivative. Children learn them very early and they play a key role in grammar evolution. All this suggests that demonstratives are of fundamental importance for spatial language and cognition.

If this important class of expressions is generally interpreted in a cross-modal frame of reference anchored by the speaker's body, there is no reason to question the universal predominance of egocentric, body-oriented representations of space in language. The research by Levinson and colleagues has yielded important new insights into the structure and choice of frames of reference; but it does not undermine longstanding assumptions about semantic universals of space and the importance of the speaker's bodily coordinates for the analysis of frames of reference.

References

Brown, Penny & Stephen S. Levinson 1993: ›Uphill‹ and ›downhill‹ in Tzeltal. *Journal of Linguistic Anthropology* 3: 46–74.

Bühler, Karl 1934: *Sprachtheorie: Die Darstellungsfunktion der Sprache.* Jena: Fischer.

Carlson-Radvansky, Laura A. & David E. Irwin 1993: Frames of reference in vision and language: Where is above? *Cognition* 46: 223–244.

Danziger, Eve 2010: Deixis, gesture, and cognition in spatial frame of reference typology. *Studies in Language* 34: 167–185.

Diessel, Holger 1999a: *Demonstratives. Form, Function, and Grammaticalization.* Amsterdam: John Benjamins.

Diessel, Holger 2006: Demonstratives, joint attention, and the emergence of grammar. *Cognitive Linguistics* 17: 463–489.

Diessel, Holger in press: Deixis and demonstratives. In: Claudia Maienborn, Klaus von Heusinger & Paul Portner (eds.), *An International Handbook of Natural Language Meaning*. Berlin/Boston: Mouton de Gruyter.

Eriksson, Mats 2008: Referring as interaction: On the interplay between linguistic and bodily practices. *Journal of Pragmatics* 41: 240–262.

Fillmore, Charles J. 1997: *Lectures on Deixis*. Stanford: CSLI Publications.

Levinson, Stephen C 1996: Frames of reference and Molyneux's question: Cross-linguistic evidence. In: Paul Bloom, Mary A. Peterson, Lynn Nadel & Merrill F. Garrett (eds.), *Language and Space*, 109–169. Cambridge: MIT Press.

Levinson, Stephen C 2003: *Space in Language and Cognition*. Cambridge: Cambridge University Press.

Levinson, Stephen C. & David P. Wilkins (eds.) 2006: *Grammar of Space. Explorations in Cognitive Diversity*. Cambridge: Cambridge University Press.

Li, Peggy & Lila Gleitman 2002: Turning the tables: Language spatial reasoning. *Cognition* 83: 265–294.

Li, Peggy, Linda Abarbanell, Lila Gleitman & Anna Papafragou 2011: Spatial reason in Tenejapan Mayans. *Cognition* 120: 33–53.

Lyons, John 1977: *Semantics*. Vol. 1–2. Cambridge: Cambridge University Press.

Majid, Asifa, Melissa Bowerman, Sotaro Kita, Daniel B.M. Haun & Stephen C. Levinson 2004: Can language restructure cognition? The case for space. *Trends in Cognitive Sciences* 8: 108–114.

Miller, George A. & Philip N. Johnson-Laird 1976: *Language and Perception*. Cambridge, MA: Harvard University Press.

Mishra, Ramesh C, Pierre R. Dasen & Shanta Niraula 2003: Ecology, language, and performance on spatial cognitive tasks. *International Journal of Psychology* 38: 366–383.

Pederson, Eric, Eve Danziger, Stephen C. Levinson, Sotaro Kita, Gunter Senft & David Wilkins 1998: Semantic typology and spatial conceptualization. *Language* 74: 557–589.