

## The multimodal framing of time: the mental timeline in language and gesture

CRISTOBÁL PAGÁN CÁNOVAS<sup>1</sup>, JAVIER VALENZUELA<sup>2</sup>

(<sup>1</sup>Institute for Culture and Society, University of Navarra, <sup>2</sup>English Department, University of Murcia)

The TIME IS SPACE metaphor is probably one of the most thoroughly researched examples of an abstract mental domain (time) structured with the help of a more concrete one (space). The psychological reality of this metaphor has been clearly established in experimental research (e.g. Casasanto & Boroditsky, 2008). Psycholinguistic research has also uncovered conceptualization patterns that go beyond language; for example, only the sagittal and vertical axes are explicitly used in the different languages of the world (Boroditsky, 2011); no language has been found that makes use of a spatial lateral axis to structure time (Radden, 2004). However, the activation of this lateral axis in the conceptualization of time has been very soundly demonstrated in many empirical works (e.g., Santiago et al, 2007, 2008; see Boroditsky 2011 for a review). All these studies point at the construction of a "mental timeline" which acts as a material anchor (Hutchins, 2005) to aid the conceptualization of time: a straight line with a directionality consistent with the writing direction used in the conceptualizer's culture (Coulson & Cánovas, 2013).

The present work introduces *TimeNet*, a multimodal database comprising hundreds of real-life temporal expressions extracted from the annotated television corpus *NewsScape* (Steen & Turner 2012). The database associates these linguistic expressions to a richer repository of multimodal information, especially their co-speech gestures. So far, more than 4500 clips have been examined, and relevant gestures have been found in 387 cases (8'6% of the cases). These gestures provide clear evidence for a spatial organization of time in spontaneous speech, even when the linguistic material contains no explicit reference to any type of spatialization. The great majority of gestures are found on the lateral axis; however, we have also found sagittal gestures, lateral gestures of a reversed direction and even vertical gestures, which reveals a much higher degree of flexibility in the use of mental timelines than found in previous studies (Casasanto & Jasmin 2013). The analysis of these multimodal constructions thus evidences a greater complexity in the mental organization of time that hitherto reported in the literature, strongly suggesting the need for more sophisticated models.

- Boroditsky, L. (2011). How Languages Construct Time. In Dehaene and Brannon (eds) *Space, time and number in the brain: Searching for the foundations of mathematical thought*, Elsevier, pp. 333–341.
- Casasanto, D., & Boroditsky, L. (2008). Time in the mind: Using space to think about time. *Cognition*, 106, 579–593.
- Casasanto, D. & Jasmin, K. (2012). The Hands of Time: Temporal gestures in English speakers. *Cognitive Linguistics*, 23(4), 643 – 674.
- Coulson, S. & Pagán Cánovas, C. 2013. Understanding Timelines: Conceptual Metaphor and Conceptual Integration. *Journal of Cognitive Semiotics* 5(1-2). 198-219.
- Hutchins, E. (2005). Material anchors for conceptual blends. *Journal of Pragmatics*, 37(10), 1555–1577.

- Santiago, J., Lupiáñez, J., Pérez, E., & Funes, M. J. (2007). Time (also) flies from left to right. *Psychonomic Bulletin & Review*, 14, 512-516.
- Santiago, J., Román, A., Ouellet, M., Rodríguez, N. & Pérez-Azor, P. (2008). In hindsight, life flows from left to right. *Psychological Research* 74(1):59-70.
- Radden, G. (2004). The metaphor TIME AS SPACE across languages. In: Elżbieta Górska and Günter Radden (eds) *Metonymy – Metaphor Collage*. Warsaw: Warsaw University Press. pp. 99-120
- Steen, F. & Turner, M. (2013) Multimodal Construction Grammar. In: Michael Borkent, Barbara Dancygier, and Jennifer Hinnell (eds) *Language and the Creative Mind*. Stanford, CA: CSLI Publications.