Introduction

The interplay of language, culture and the human body has developed into a major field of study in semantics in the past decades. Much of this research has been conducted within the framework of Cognitive Linguistics. George Lakoff and Mark Johnson’s notions of *embodiment* and *experientialism*, as well as their work on the role of metaphor and metonymy in conceptualization and linguistic structure proposed an alternative to formal semantic theories (Lakoff & Johnson 1980, 1999, Johnson 1987, Lakoff 1987).

The term embodiment was initially used in the meaning of a bodily, experiential basis underlying human interaction. The world, however, does not only motivate pre-conceptual schemata, but also the very conceptualization of things as well as abstract notions, and with that it influences the linguistic form. Lakoff and Johnson (1999: 3–4) underline the fact that “[t]he mind is inherently embodied” and that “the very structure of reason itself comes from the details of our human embodiment. The same neural and cognitive mechanisms that allow us to perceive and move around also create our conceptual systems and models of reason”. Categorization, they argue “is determined by the structure of the brain and the information flow and memorizing; the information received by neurons must be “categorized” in order to be passed by a much smaller set of synaptic connections” (Lakoff & Johnson 1999: 17). Neural evidence for the embodied character of language has come up in numerous studies devoted to various kinds of phenomena (e.g. Barsalou 2008, Bergen *et al.* 2010, Siakaluk *et al.* 2011). Lakoff and Johnson’s concepts of *embodiment* and *experientialism* were further developed in different directions and became influential in various areas of linguistics and cultural studies, as well as in psychology, anthropology, biosemiotics, neurology, and other sciences (cf. Csordas 1994, Gibbs 2006, McPherron & Ramanathan 2011, Rohrer 2007, Ziemke, Zlatev & Frank 2007). While in comparative studies embodiment exhibits language universals, it manifests itself in a wide range of “parameterization” of embodied metaphors with various paths of lexical extensions.

Recent years have brought about a number of studies which concentrate on the interaction between embodiment and language-specific cultural models (Enfield and Wierzbicka 2002, Kövecses 2000, 2005, 2010, Maalej and Yu 2011, Sharifian 2011, Sharifian *et al.* 2008, Wierzbicka 1999). However, far more
important is that embodiment fundamentally underlies human conceptualization in that the “human body provides one of the most salient models for understanding, describing, and denoting concepts that are more difficult to understand, describe, and denote” (Heine, this volume).

Soteria Svorou (1993: 1) begins her book *The Grammar of Space* with the crucial observation that “We experience this world in ways that are determined by our biological make-up.” Knowledge is typically conceptualized through the bodily actions associated with the perception of the world. Research in the semantic fields of perception and cognition have led to the postulation of linguistic universals regarding the hierarchy of verbs of perception $\text{SEE > HEARING > TOUCH > TASTE/SMELL}$ (Viberg 1984) and their extensions into the realm of cognition. Primacy of the visual domain has been claimed across all cultures and languages of the world (Sweetser 1990); however, more recent research on non-European languages has challenged this view. Examples from Australian languages show that ‘hearing’ is the core perception of cognition that leads to understanding (Evans & Wilkins 2000). A verb with the meaning ‘perceiving food’ combining the sensory modalities of taste, smell and touch is the source domain for acquiring knowledge in some Khoeid languages of Southern Africa (Brenzinger & Fehn 2013). In all languages of the world, however, sensory modalities seem to expand from the bodily function to perception, then to cognition, and, finally, to knowledge.

“Grammaticalization is defined as the development from lexical to grammatical forms, and from grammatical to even more grammatical forms” (Heine, this volume). The principle of unidirectionality in semantic change has been the main claim in research within the grammaticalization framework (Bybee et al. 1994, Heine 1997, Heine & Kuteva 2002, Heine et al. 1991a, b, Svorou 1986, 1993, Sweetser 1990, Traugott & Heine 1991, Traugott & Dasher 2002) and most studies aim “at reconstructing regularities in the evolution of conceptual transfer across languages” (Heine, this volume).

Studies in the grammaticalization framework demonstrate that conceptualizations underlying languages in very different semantic fields are often motivated by body-part models. Heine (1997: 18–34), for example, claims that numeral systems for counting across the languages of the world are non-arbitrary in that they are motivated by the anatomic characteristic of the human body. The most common base numbers are 5, 10, 15, 20 in analogy with the digits of the human body, i.e. hand + hand + foot + foot. In his contribution to this volume, Heine adds examples in which actual names of body-parts extend their meanings to number words. In Zulu, names for ‘fingers’ become linguistic expressions for ‘numerals’, i.e. *isithupha*, literally ‘the thumb’ for the number 6 and *isikhombisa*, literally ‘the index finger’ for the number 7. Pasch, this