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RÉFÉRENCE

Bacchi, A., Digonnet, R. & Standford, J.L. (Eds.). 2018. Jiyoung Yoon & Stefan Gries (Eds.). 2016. *Sensory Perception in Language, Embodiment and Epistemology*. Switzerland: Springer Nature. 215 pp.

- 1 Sensory organs can be viewed as a bridge connecting the human body with the environment, thus allowing interactions between our body and its surroundings. Sensory experience is therefore crucial to our understanding of the world and linguistic processes involved in it. The present book, *Sensory perceptions in Language, Embodiment and Epistemology*, represents a major contribution to highlighting how sensory perceptions shape our linguistic representation of the world from philosophical, linguistic, and psychological perspectives. The book is a themed volume of 11 original chapters divided into two sections, distinguishing theoretical perspectives (chapters 1-4) from applied ones (chapters 5-11).
- 2 In chapter 1, Orians highlights that our mind is molded by our ancestors' adaptive responses to short-term changes in the local environment. Their adaptations to past environment leave their imprint on our mind and remain operational, even though some behaviors are no longer valuable in the contemporary world. We could have a better understanding of current human behaviors if we knew more about the nature of their evolutionary roots. One inspiring aspect of Orians's contribution lies in its interpretation of sensory experience and language in an evolutionary perspective.

Sensory legacy persists in our mind and strongly influences contemporary human behavior. For example, the fact that the color red is often linked to negative emotions probably originates from the association between red and blood. Orians reckons that human language is an “incidental byproduct of the evolution of large brains” (p. 16). With social groups growing larger, individuals are to deal with increasing social complexity and communicative demands. Language enables individuals in larger groups to exchange information, talk about intentions and express opinions much more efficiently. Finally, the fact that the powerful legacy left by our ancestors aimed to cope with short-term changes in the immediate environment might explain our difficulty to respond to large-scale challenges over long time-spans, such as today’s major environmental challenges, which require us to “treat all of humanity as members of our in-group” (p.17).

- 3 Della Puta’s contribution (chapter 2) reviews the role of Mirror Neurons (MNs) in motor language processing, bringing new insights into embodied approaches to cognition and language in support of empirical findings in psychology, neurology and psycholinguistics. As opposed to Cartesian accounts of cognition arguing that the mind’s activity is independent from the body, the embodied theory of mind postulates that the mind is grounded in bodily experience and that meaning construction relies on the sensor-motor system. Recent research on MNs gives support to the embodied mind paradigm, against a recurrent criticism for excessive empiricism. MNs are neural cells that are activated when a person executes a movement, as well as when the linguistic designation of the same movement is seen, uttered, heard or imagined: at the neural level, the perception of an action produces the same effect as its physical enactment in one’s body, thus providing strong evidence that language and action are linked cognitively. However, research inquiring into non-literal language processing, such as metaphors and idioms, seem unable to reach a convincing conclusion because the degree of salience of literal meaning can vary from one figurative expression to another. For example, in idioms the relationship between linguistic designations of actions and their meaning is usually lost, and the perception of words will not trigger the activation of motor brain areas. The author suggests further investigations into the correlation between linguistic relativity and cognition as well as the workings of the sensor-motor system in second language acquisition.
- 4 In chapter 3, Genovesi presents major arguments for a deflationary account of metaphor, developed by relevance theorists and supported by contextualists, which sees metaphors, as well as other figurative uses of language, as a loose use of speech, therefore not requiring more cognitive efforts than literal language processing nor specific cognitive mechanisms. After examining several cases of metaphor, the author found that while the meaning construction of some metaphors tends to be an automatic, subconscious and unreflective process, as deflationary accounts postulate, other metaphors arouse a ‘felt gap’ between what is said and what is meant, namely between literal and metaphorical meaning. Thus, metaphor comprehension is not simply unreflective. On the contrary, it is closely related to Grice’s conception of implicature which involves a two-step process. This ‘gap’ is particularly visible in poetic and novel metaphor. In the light of Davidson’s (1978) theory, he further argues that the deflationary approach is inadequate in that it neglects the non-propositional, or aspectual property of metaphor: metaphors do bring the audience’s attention to certain aspects of a topic. Furthermore, metaphors are open-ended, capable of creating

an imagistic effect and of inviting us to construct a mental image of the topic that can “assist us in furthering our cognition of it” (p.56).

- 5 In chapter 4, Weiguo Qu revisits Davidson’s hypothesis, which treats metaphors as prompters that direct our attention to relations set between two entities, and which rejects the conceptual content of metaphors on the grounds that they have to do with use, not meaning. Basic assumptions of Lakoff and Johnson’s cognitive approach assume that metaphors consist of cross-domain mappings allowing us to understand abstract experience and concepts in terms of more concrete and tangible ones. Following Davidson’s hypothesis, the author contends that, rather than establishing cross-domain mappings between two conceptual domains, metaphors invite us to revisit and re-conceptualize primary perceptual experience. In his view, by reducing metaphors to unidirectional mappings from source domain to target domain, the diversity of perceptual representations is lost. This ‘impoverishment’ of metaphors is strongly noticeable when the cognitive approach is applied to poetry interpretation where relying on pre-established conceptual mappings to decode the meaning of a poem is not sufficient to grasp images that are evoked by recalling perceptual experience and memories. He argues that the key property of metaphors is not talking about some concepts in terms of others, but restoring the “perceptual and sensory richness and vividness” (p.68) that are lost in propositional statements.
- 6 On the basis of research corroborating that metaphors activate stronger emotional responses at the neural level than their literal counterparts, Citron and Zervos’s study (chapter 5) explores whether emotional engagement is driven by the aesthetic appreciation of metaphors and, which neural networks are involved. In their study, participants were asked to silently read sentences containing taste metaphors and their literal counterparts, e.g. *That was a bitter breakup* and *That was a bad breakup*, while brain activity was recorded. The participants were then asked to rate the same sentences for their degree of beauty and familiarity. The results show that metaphors are considered as more aesthetically pleasing than their literal counterparts when familiarity is controlled. However, the aesthetic appreciation of metaphors was not significantly correlated to the degree of activation of neural areas responsible for emotion processing. Hence, aesthetic evaluation does not account for the emotional engagement elicited by metaphors. The findings also revealed that, in line with previous research, the perception of beauty in metaphors enhances activation of somatosensory neural areas, i.e., evokes strong bodily sensations. Thus, the question is left open as to what leads to emotional engagement in metaphor comprehension processes. Citron and Zervos’s study is reminiscent of Della Puta’s contribution (chapter 2) with regard to the involvement of Mirror Neurons both in motion-related language processing and physical enactment of motion in our own body. Both focus on the representation of metaphors at the neural level and point out that, based on neuroscientific empirical evidence, bodily experience and the construction of metaphorical meaning are highly linked, thus providing powerful empirical support to an embodied theory of metaphors.
- 7 Chapter 6 discusses the discrepancy between perceptual vision and language with different theoretical frameworks of language and cognition brought together. Sentences like *The rail track runs from the North town to the South town* illustrate a discrepancy between the perception of a stationary entity and its linguistic representation as being capable of moving from one place to another. The

understanding and production of this type of phenomenon, i.e. what Talmy (1983) called Fictive Motion (FM), require motivating a mental simulation process of motion. Using a Lexical Constructional Model, a framework that integrates functional and cognitive approaches to language, Baicci explores linguistic constraints, both external and internal, of FM expressions in English collected from written descriptions of pictorial material. She rejects Matlock's binary typology of syntactic patterns, whereby one tolerates manner of motion verbs while the other does not, and argues that the manner component is not a discriminatory factor.

- 8 In chapter 7 Stanford investigates the underlying conceptual grounding and linguistic conceptualization of a specific semantic frame — namely COLOR/SEEING — by contrasting and analyzing two experimental protocols. Implicit association tests (IATs) allow to unveil implicit attitudes toward different color categories divided into three dimensions (hue, saturation, lightness/brightness). The other protocol, RT (reaction time), reflects the facility of processing of positive/negative assessment of color-related metonymic and metaphoric expressions, with reaction time latencies as a measurement parameter. A close inspection of experimental results shows that the two approaches provide complementary evidence for color terms understanding and assessment. What is related to light (yellow, warmth) tends to be judged as more pleasant and positive and takes less time to process. This association between warm color terms and positive assessment is, according the author, grounded in our bodily experience, whereby we “project temperature onto the visual aspect of color, and hence transfer this goodness to color warmth” (p. 126). Furthermore, the author argues that some basic conceptual metaphors e.g. KNOWING IS SEEING and SEEING IS LIGHT and underlying image schemas are also activated in metaphoric and metonymic conceptualization of COLOR/SEEING.
- 9 Julich studies conceptual metaphors underlying musical discourse with a special focus on the source domains of MOTION-IN-SPACE and TIME in chapter 8. Johnson and Larson's (2003) *Metaphors Musical Motion* theory contend that the conceptual grounding of music lies in our understanding of time, which is conventionally conceptualized as motion in space. The author adopts a three-step procedure for metaphor analysis: identification of metaphors in music criticism texts with MIPVU (Metaphor Identification Procedure developed at Vrije Universiteit Amsterdam, Steen et al. 2010), assignment of source domains, and finally in-depth analysis of source domains in order to point up underlying conceptual mappings. The manual analysis of a 10,000-word corpus retrieved from music criticism suggests that our conceptualization of music does rely on MOTION-IN-SPACE source domain. However, contrary to Johnson and Larson's assertion, conceptualization of music indicates a set of complex mappings referring to distinct aspects of musical structure beyond the TIME domain. Thus, claiming that the concept of music is simply shaped by a TIME IS MOTION mapping neglects different properties of musical structure. Another finding challenging Johnson and Larson's theory is that most motion metaphors of music express motion regardless of the position of ego-listener. Overall, the study confirms the role of metaphor as a cognitive tool in our understanding of abstract, musical structure, based on corpus data analysis.
- 10 Bagli's study (chapter 9) represents an investigation into the linguistic representation of taste, an under-studied sensory domain that is traditionally classified as a low-rank perception, by probing into taste categories and family resemblances within category

members. The author carried out a free-sorting task in which participants were asked to group pre-selected taste terms into categories and name each category with a member term in it. In order to further inquire into family resemblance between potential category prototypes, that is, taste terms most frequently chosen as category name, and category members, the author opted for Mutual Information (MI), an algorithm that scores the probability that two words collocate with each other, as an indicator of semantic distance between terms, as well as GraphColl, a software for visualizing collocation networks. Analysis shows five potential category prototypes: sweet, flavorful, seasoned, sour, spicy, and reveals that 30% of participants classified bitter as member of sour category, in keeping with previous studies pointing out the sour/bitter confusion. Furthermore, the internal organization of the domain of taste is in line with the usage-based approach in Cognitive Linguistics. For example, the author originally included *zesty* in the SOUR/BITTER category, presuming that the word *zest* may refer to the skin of citrus fruit. Participants however categorized the item between the category of FLAVORFUL and that of SPICY, thus suggesting a flavorful and piquant taste evoked by citrus fruit instead of a sour taste. Lastly, and most importantly, the author stresses that taste “is not as conceptually underrepresented as it has been described in philosophy and linguistics” (p.173).

- 11 In chapter 10 Digonnet demonstrates how metaphor and metonym contribute to expanding the linguistic representation of smell where the lack of specific terms is noticeable in comparison with other senses. His analysis of a general corpus (Corpus of Contemporary American English—COCA) displays quite a few conceptual metaphors that present olfactory perception as an abstract concept (target domain) that is consequently understood in terms of familiar concepts (source domain), e.g. LIQUID, PERSON, and INVADER. Interestingly, these source domains appear to be more concrete than those used for other perceptions. On top of being a target domain, the body-based nature of olfactory perception allows conceptualization of other abstract phenomena, as is the case with SMELLING IS SUSPECTING. The application of metonymies to characterize the olfactory domain can be seen in conceptual metonyms such as NOSE FOR SMELL, structured by BODY PART FOR ITS TYPICAL FUNCTIONS. Furthermore, the author highlights that metaphors and metonymies are importantly connected with each other. To complement linguistic data from COCA, the author incorporated a special corpus, Radhika Jha’s novel *Smell*, into his analysis of metaphors of smell. It is demonstrated that SMELL IS INVADER appears to be an omnipresent conceptual metaphor underlying the linguistic representation of the olfactory domain in the novel.
- 12 In chapter 11 Lievers addresses synesthesia and other types of figurative language referring to sensory domains, with a special focus on their internal properties and different ways in which they interact with senses. Synesthesia is a type of metaphor involving conceptual transfer between sensory domains, e.g. *fragrant music*. Three other figures, metonymy, hypallage and simile, are also proved to refer to the senses, each in a specific way. Metonymy and hypallage involve only one sensory modality and can both co-occur and interact with synesthesia, but they differ in ways of interaction. By contrast, in simile, though two sensory domains are brought together, they are compared and presented as sharing one property rather than suggesting a cross-sensory transfer. That is to say, there is no synesthetic association between compared concepts, moreover, their identity remains unchanged, as opposed to synesthesia. The author emphasizes that even though synesthesia and simile coexist in a text, they are not in competition and by no means interact with each other. Finally, the author issues

a methodological warning for selecting and analyzing data in studies of synesthesia. Taking other figures into account is necessary to distinguish synesthesia and shed light on its intrinsic properties.

- 13 To conclude, these 11 chapters together offer important insights into sensory language by providing a comprehensive and enlightening description of the intricate links between sensory experience, cognition and language from various perspectives. This volume will serve as a valuable reference for philosophers, linguists and psychologists interested in language and embodiment. The volume brings together a variety of research methods for unveiling the close links between linguistic and neural processes of sensory perception. A minor criticism would be that almost all chapters only focus on linguistic data in English, except for chapter 11 where several excerpts from poems in Italian are discussed. Incorporating studies across diverse languages could have offered a wider picture of variations in the conceptualization of sensory experience and its linguistic representations, as recently suggested by Jackson et al.'s comprehensive analysis of a sample of 2,474 spoken languages using “colexification” (Jackson et al. 2019).

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