Analogy Is an Implicit Universal Semantic Map

Comment on 'Grammaticalization and Semantic Maps: Evidence from Artificial Language Evolution' by Remi van Trijp (2010)

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Van Trijp (2010) convincingly shows that very little linguistic information—or even none at all—is needed to produce multifunctional linguistic markers. Although it still remains to be demonstrated that the mechanisms used in his artificial world will lead to multifunctionality and semantic maps which are similar to the semantic maps that are attested in the "real" world, it is promising to see multifunctionality arising without pre-established grammatical categories. Still, I disagree with van Trijp about the nature of the mechanism that he uses to obtain multifunctionality, namely analogical reasoning. In contrast to his claim, I think that this mechanism should be considered an implicit universal semantic map. Even though my impression is that this disagreement is only a matter of words rather than one of content, I still think the issue is important enough to be clarified in more detail.

In the last paragraph of Section 3.2, van Trijp writes that "the algorithm for analogical reasoning […] does not implement an implicit universal [semantic map]".[1] His algorithm for analogical reasoning provides the artificial agents with a method to determine the similarity between sensory events. If each event is conceived as a point in conceptual space, then the algorithm thus provides structure among these points. Given enough artificially produced languages, I expect that the lexicalizations of these points will (on average) replicate the sensory similarity between the events.

To make this a bit more concrete, consider the two events van Trijp uses to exemplify the analogical reasoning in his artificial world. He argues that by analyzing the sensory information, an event 'A pushes B' can be interpreted as being similar to an event 'C walk-to D' (note that I am talking about the real event here, not the lexical expression to describe them), and consequently, that the "pusher" A can be interpreted as being similar to the "walker" C. Now, the fact that the algorithm for analogical reasoning makes a suggestion for the similarity between these roles should lead to a similar lexicalization of the roles of 'pusher' and 'walker' (on average, given many different artificial languages). So, the analogical reasoning will be directly reflected in the semantic map.

The abstract algorithm to determine similarity between sensory perceptions is, of course, a rather different kind of semantic map than the traditional graph structures as described in Haspelmath (2003). However, as I have argued in my contribution to this issue (Cysouw 2010), the "real" semantic map is a matrix of distances between events, and the graph is only a visualization of the structure of this distance matrix. In this construal of semantic maps, the

[1] In this quote, van Trijp actually writes "conceptual space", which I have replaced here with "semantic map". This difference is just a question of terminology, as I have detailed in section 2 of my contribution to this issue (Cysouw 2010). In my usage of terms (following Haspelmath 2003), 'conceptual space' refers to the (infinite and unstructured) collection of everything that can be talked about, and 'semantic map' is the structure among these functions/meanings. Van Trijp uses Croft's (2003:133-139) terminology, in which 'conceptual space' is used for what Haspelmath calls 'semantic map'.

algorithm as used by van Trijp is in fact a metric on events. So, analogical reasoning is a metric that produces the semantic map.

This way of looking at things could lead to the following research strategy: an algorithm for analogical reasoning is proposed, and many different artificial languages are developed on this basis. If these artificial languages (on average) result in a distance matrix similar to what is found in real-world languages, then this would suggest that the sensory analogy algorithm replicates the human judgments. The world-wide diversity of languages might thus be useful to falsify models of sensory interpretation.

References

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