Function Variables in Metaphoric Interpretation: Evidence from Iconicity in Sign Languages

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Metaphors abound in both sign and spoken languages. However, in sign languages, metaphors work a bit differently from spoken languages. Specifically, metaphors in sign languages interact in interesting ways with the iconicity that is prevalent in sign languages. We suggest that by studying the interaction between iconicity and metaphor we can gain a better understanding of how metaphors work. Specifically, we will argue that the interpretation of metaphor requires the inhibition of irrelevant properties, and that iconically represented signs cannot be inhibited.

Meir (2010) notes that some expressions that receive a metaphorical interpretation in spoken languages cannot be so interpreted in sign languages. For example, (1) normally does not mean that the house literally ate all my savings, but that all my savings were used to buy the house.

(1) The house ate up all my savings.

However, this metaphorical interpretation is unavailable when this sentence is translated to sign languages, such as American or Israeli Sign Languages. Meir attributes the unavailability of metaphorical interpretation to the iconicity of the sign EAT in these languages, whose form represents putting something into the agent's mouth. Yet the metaphorical meaning is not built on these meaning components, but rather on the consumption of the food, which is not represented in the form of EAT. In order to capture the interaction between the iconic and the metaphorical mappings, she formulates the Double Mapping Constraint (DMC): a metaphorical mapping of an iconic form should preserve the structural correspondences of the iconic mapping.

The question arises: what is the source of the DMC? We propose that metaphor requires inhibition of the literal meaning, and iconic signs cannot be inhibited.

The processing of metaphor has been shown to require inhibition of the literal meaning (Glucksberg *et al.*2001; Langdon *et al.* 2002; Fernández 2007). When we consider the classic example (2), we have to suppress the irrelevant properties of the sun, such as being extremely massive or being composed of mainly hydrogen.

(2) Juliette is the sun.

Thompson *et al.* (2010) have found that iconic signs are much harder to inhibit than non-iconic ones. They asked deaf signers of British Sign Language (BSL) to make a phonological decision (to decide whether BSL signs were produced with straight or curved fingers) on both iconic and non-iconic signs, and found that the iconic signs led to slower reaction times and more errors. They concluded that meaning is activated automatically for highly iconic signs, and therefore cannot be inhibited. We propose that this is the reason why aspects of the literal meaning of signs which are represented iconically cannot be ignored. Since metaphor requires inhibition of meaning components that are not relevant for the metaphorical interpretation, and iconicity prevents them from being ignored, the metaphorical interpretation is not available.

In our formalization of this idea we assume, taking Stern (2000) as our starting point, that, in a simple metaphor like (2), there is one contextually determined property *P* that is associated with the sun, e.g. *be beautiful* or *be necessary for life*. Then (2) is interpreted as (3).

(3) Juliette is *P*

Stern allows for the possibility that *P* is not one property, but the set of all relevant properties associated with the sun, and a function selects the property that is used for the metaphoric interpretation, but he doesn't pursue this option.

We propose that metaphor involves not a function but a function variable *X*, whose value is determined contextually by an assignment function, so that (2) really means (4).

(4) Juliette is *X(P)*

In the appropriate context, *X* is assigned a function that selects the appropriate property from *P*, say *be beautiful*, and all the other properties of the sun are inhibited.

However, if, in a sign language, one of the properties is represented iconically, it cannot be inhibited, and *X* must be assigned a function that picks it; if the meaning of this property is not appropriate for the intended metaphoric interpretation, this interpretation is thereby blocked.

It has already been shown that assignment functions can be affected by iconicity. Schlenker *et al.*(2013) point out that complement set anaphora is impossible in spoken language. While (6a) and (6b) are possible continuations of (5), (6c), which refers to the set of students who did *not* come to class, is impossible.

(5) Most students came to class.

(6) a. They asked good questions

b. They are a serious group.

c. * They stayed home instead.

However, in sign languages (Schlenker *et al.* have tested this for ASL, LSF, and LIS), there is a strategy that makes such anaphora possible. The signer establishes a large locus that corresponds to all of the students in the class. The signer then indicates an embedded sub-locus that corresponds to the group of students who came to class. This makes it possible to refer to the complement set, by pointing towards the area of the large locus that doesn't overlap with the sublocus. Thus, the iconic representation of sets as areas in space enables an assignment function to assign a value that is normally unavailable.

We propose that metaphor is another case where an assignment function is influenced by iconicity: in the case of (1), the iconic representation of the property of putting something into one's mouth forces *X* to be assigned a function that picks it, thus preventing it from being inhibited and blocking the metaphoric interpretation.

References

Fernández, P. R. (2007). Suppression in metaphor interpretation: Differences between meaning selection and meaning construction. *Journal of Semantics*,*24*(4), 345-371.

Glucksberg, S., Newsome, M. R., & Goldvarg, Y. (2001). Inhibition of the literal: Filtering metaphor-irrelevant information during metaphor comprehension. *Metaphor and Symbol*, *16*(3-4), 277-298.

Langdon, R., Davies, M., & Coltheart, M. (2002). Understanding minds and understanding communicated meanings in schizophrenia. *Mind & Language*,*17*(1-2), 68-104.

Meir I. (2010) Iconicity and metaphor: constraints on metaphorical extension of iconic forms. *Language* 86, 865–896.

Schlenker P, Lamberton J, Santoro M. 2013 Iconic variables. *Linguistics & Philosophy* 36, 91–149.

Stern, J. (2000). Metaphor in context. Cambridge, MA: MIT Press.

Thompson RL, Vinson DP, Vigliocco G. 2010 The link between form and meaning in British Sign Language: effect of iconicity for phonological decisions. *Journal of Experimental Psychology: Learning, Memory & Cognition* 36, 1017–1027.