Towards a unified view of "co-sign gesture" depictions as demonstrations

Introduction. Although natural language semantics deals primarily with abstract symbolic meaning, recent interest in extending formal semantic analysis to sign languages and other domains (gesture, pictures, etc., as in Schlenker, 2018) has revived questions about the role that iconicity plays in the grammar of sign languages. On the one hand, the iconic potential of sign languages has been argued to make visible compositional pieces of the grammar that have been proposed for theoretical reasons yet lack overt realization in spoken languages, such as degrees (Aristodemo and Geraci, 2018) or event boundaries (Wilbur and Malaia 2008); see discussion in Kuhn and Aristodemo (2017). Here we consider a different view, that iconic elements of language are distinct from the underlying abstract components of language and cannot be analysed as visible components of logical grammar. To that end we propose a general approach to "co-sign" gestures where a variety of iconic depictive elements in sign languages are modelled as demonstrations in the sense of Davidson (2015). Here we draw on evidence from three different sign language phenomena which illustrate the interaction between the iconic and abstract elements of a linguistic utterance; sign language classifiers (Davidson, 2015), role shift (Maier, 2018; Steinbach, 2023b), and iconic comparatives (Koulidobrova et al., 2023; Thalluri and Davidson, to appear).

Classifiers. The composition of sign language classifiers provide a clear illustration of the interaction between gestural and linguistic content (Emmorey and Herzig, 2003; Zucchi et al., 2011) as illustrated in the denotation of the size and shape classifier in ASL, following Davidson (2015).

(1) $[\![\text{CL-B MOVE}]\!] = \lambda d.\lambda x.\lambda e.[theme(e,x) \wedge flat-object(x) \wedge moving(e) \wedge \textbf{\textit{Demonstration}}(d_0, e)]$

The *demonstration -like* operator is part of the semantics of the verbal predicate, and it takes the demonstration component of the classifier as an argument. The resulting expression has an interpretation along the lines of *'the book moved in a manner that resembles demonstration d_0'*. Classifiers can be interpreted as predicates of states or events which are accompanied by a demonstration event. While the handshape of the classifier is a linguistic element that denotes an entity (agent or theme), and a predicate (state or event), the iconic depiction of the movement is captured through language external reference to an event which is a demonstration of the event in question.

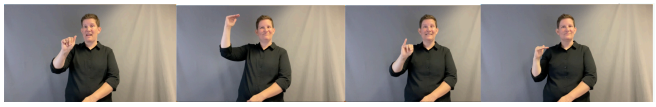
Role shift. This approach to the interaction between the gestural and linguistic components of utterances has also allowed for a nuanced analysis of role shift in sign language, which has also been analyzes as a visible shift of a context parameter (Schlenker, 2017). Davidson (2015) and Maier (2018) extends the semantics of demonstration to account for the attitude role shift (demonstration of words/utterance) and action role shift (depiction/demonstration of sentiments and gestures). Steinbach (2023b) uses this to provide an analysis for complex demonstrations in instances of role shift in narratives in DGS . (2) includes a description of the narrator having an idea, along with a demonstration of the signer's emotional state, which again can be captured formally in a way that makes reference to an event expressing/demonstrating the sentiment but not encoding it further in the grammar; linguistic and depictive elements co-occur but remain distinct in kind.

(2)

$\exists e[have-idea(e) \wedge agent(e, shepherd-boy) \wedge form(e, (`HAVE-IDEA') \wedge \textbf{\textit{demonstration}}(d_{10}, e)]$

d_{10} is the signer's reproduction of the shepherd boy who has an idea. d_{10} involves the facial expression, the upper part of the body and the hands

Comparatives. As a third case study we turn to comparatives, given the intruiging proposal that the phonological form of gradable predicates in a sign language can iconically represent the boundaries and points on a degree scale, as in LIS (Aristodemo and Geraci, 2018). This perspective would motivate an incorporation of logical and iconic properties of language since sign languages seem to offer visible evidence of abstract linguistic objects like scales which have been theoretically motivated in spoken languages but whose existence has been inferred through certain syntactic and semantic cues. However, it is surprising under this account that while all sign languages would seem to have similar iconic potential, they seem to exhibit cross-linguistic variation in this domain. ASL, which has the identical sign for tall as LIS, has been argued to lack a degree ontology on the basis of iconicity- independent features of the language, exhibiting similar properties to degree-less spoken languages like Washo (Koulidobrova et al., 2023), creating a situation in which the same iconic constructions in two sign languages seem to have lead to two opposing conclusions about whether the iconicity makes degrees "visible" in each language.

(3) 

MARY TALL$_{(at-signer-head)}$ GIANNI TALL$_{(neutral-space)}$ ((Thalluri and Davidson, to appear))
Lit. 'Mary is this tall, Gianni is this tall.' ('Mary is taller than Gianni.')

In response, Thalluri and Davidson (to appear) provide an demonstration based analysis of such iconic comparatives as in (4), which treats the iconic component (the demonstration of height) as a gestural demonstration, co-produced but separate in kind from the logical semantic representation.

(4) $[\![\text{GIANNI a-IX TALL}_{(neutral-space)}]\!]^c = [\exists s(s \in domain(\langle D_{height}, \succeq_{height}\rangle))(Holder(s, GIANNI) \wedge Tall_c(s) \wedge \textbf{\textit{Demonstration}}(\delta_1, s))]$
'Gianni is in a state of being tall (relative to the context c) and δ_1 demonstrates that state.'

Much like the cases of classifiers and role shift, we argue that this is yet another instance of the interaction between gestural and logical elements of utterances. While the interpretation of the iconic elements remains constant across phenomena and sign languages, it does not overtly or visible express any aspects of the logical grammar, but rather relates to the logical structure through a demonstration predicate that seeks a depiction as an argument. This framework allows a modality independent view of iconicity, that can also be generalised across multiple phenomena in speech and sign. Moreover, it is flexible enough to allow cross-linguistic variation across sign languages which may share the same iconic potential, yet differ in their grammatical properties.

Conclusion. There are of course many outstanding questions with this and any approach attempting to capture a broad range of iconic depictions in language. For example, Steinbach (2023a) notes that depictive components of signs seem to be more at-issue in sign languages than co-speech gestures accompanying speech, raising the issue of potentially modality specific information structural properties of these iconic elements. This framework makes no commitments or explanation of the modality specific at-issue nature of demonstrations but does allow for a gradience in it across different constructions in both speech and sign. Because it uniformly captures similar iconic elements in constructions in both spoken and sign modalities, we argue it brings us closer to a more integrated approach to language in conjunction with gesture as proposed in Goldin-Meadow and Brentari (2017), critically including depictive gestures as they appear in sign languages, analyzed in a way that preserves a formal analysis while keeping the depiction itself outside the grammatical structure.