THE GRAMMAR OF THE BODY AND THE EMERGENCE OF COMPLEXITY IN SIGN LANGUAGES

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In all human languages, spoken and signed, complex expressions are compositional: their meanings are determined by the meanings of their constituents and the rules for combining them (e.g., Krifka 2001; Jackendoff 2011; Pfau et al 2012; Smith & Kirby 2012). In sign languages only, however, while the hands convey words, individual actions of face, head, and torso can manifest different linguistic functions, often simultaneously, creating visual compositional, complex configurations. Squinted eyes in Israeli Sign Language (ISL) signal the interlocutor to retrieve shared information (Dachkovsky & Sandler 2009); brow raise signals yes/no questions in ISL as in ASL (Liddell 1980); and the combination of squinted eyes and brow raise in ISL signals a yes/no question about shared information (Nespor & Sandler 1999). Similarly, different head and body postures can represent different participants (e.g., Lillo-Martin 1995; Metzger 1995), concepts (van der Kooji & Crasborn 2006), or places in a discourse. Figure 1 schematizes how movements of different articulators contribute to the overall meaning of an utterance in contemporary ISL, to create a Grammar of the Body (Sandler to appear).

However, corporeal and linguistic complexity do not emerge all at once. An earlier, preliminary study of a newly emerging sign language in a Bedouin community with a high incidence of deafness, Al Sayyid Bedouin Sign Language, shows instead that the different articulators are recruited gradually across generations to convey increasingly complex linguistic functions (Sandler 2012). **This, suggests that the recruitment of the body in sign languages provides a visual map of the emergence of complexity in a new language.** In our current project, we adopt this initial finding as a strategy to systematically trace the diachronic development of linguistic complexity across three generations (including the first generation) in another sign language that originated only 80 years ago: Israeli Sign Language (ISL). We coded and analyzed two-minute narratives from 15 signers, five in each of three age groups, focusing on the form and function of head and torso actions. In this way we are able to identify increasing systematicity and complexity of linguistic structure as the language gets older, with the body as our guide.

We find that the signers use the head and torso differently and with increasing complexity across generations. Specifically, (1) while older signers use their articulators more than younger signers, it is younger signers who exploit a more variegated head and torso movement pattern by activating the side-to-side axis in addition to the forward and back movement favored by older signers. (2) An analysis of the language functions conveyed reveals that younger signers exploit the additional axis exclusively for marking specific linguistic functions, including parentheticals, questions and coordination. (3) Older signers tend to move their head and torso together as a unit whereas younger signers are able to activate their head and torso independently more than older signers, assigning separate functions to each articulator simultaneously. Finally, (4) younger signers sign much faster than older signers, signalling an increase in efficiency in their language.

The expanded use of the spatial axes in young signers is compatible with the finding that younger signers locate different referents and concepts using the additional side-to-side axis (Padden et al. 2010; Meir 2012). Our study also provides a whole-body context for the finding that the use of eye and head signals on relative clauses becomes significantly more systematic and linguistic in younger ISL signers (Dachkovsky 2014). The study confirms that articulator use and linguistic complexity increase in tandem across generations, and that the bodily organization of articulators in sign languages is a key to the organization of emergent linguistic structure.
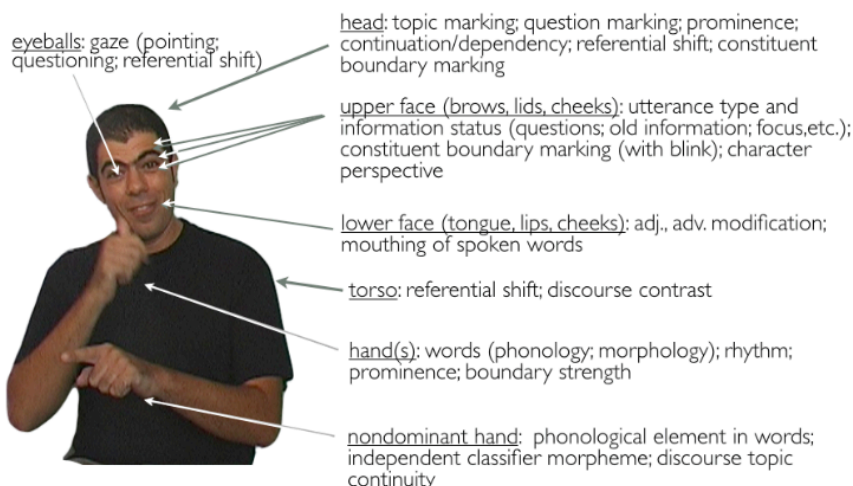
eyeballs: gaze (pointing; questioning; referential shift)

head: topic marking; question marking; prominence; continuation/dependency; referential shift; constituent boundary marking

upper face (brows, lids, cheeks): utterance type and information status (questions; old information; focus,etc.); constituent boundary marking (with blink); character perspective

lower face (tongue, lips, cheeks): adj., adv. modification; mouthing of spoken words

torso: referential shift; discourse contrast

hand(s): words (phonology; morphology); rhythm; prominence; boundary strength

nondominant hand: phonological element in words; independent classifier morpheme; discourse topic continuity

Figure 1: Body articulators recruited for linguistic functions (following Sandler 2012).

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