

Connecting prosody to duality of patterning in two modalities

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This talk sketches an idea about what kind of models of spoken language prosody will be most useful in making cross-language comparisons, to be able to identify non-trivial universals and understand how speech might differ from the vocal communication systems of our closest non-human relatives. It is an idea that I have been trying to articulate (with varying degrees of failure) for more than three decades, starting with the book that grew out of my doctoral dissertation [1].

The idea has been difficult to articulate in large part because the alphabetic model that was foundational in the development of modern linguistics is so entrenched in our thinking about speech prosody. In laying out the idea, therefore, it is useful to look to a different modality, where the compositional structures that govern the alignment relationships among “gestures” (the basic units in the articulation of an utterance) are more transparently related to the alignment relationships among the objects of perception that are innate to the medium. That is, it is useful to incorporate observations and insights that have emerged in the last half century of research on the prosody of signed languages, such as American Sign Language [2, 3, 4] (ASL), Israeli Sign Language [5, 6] (ISL), and the newly emerging Al-Sayyid Bedouin Sign Language [7] (ABSL). I will review some of this work to make the first three of the following sequence of arguments:

- (1) Every human language, signed as well as spoken, has a richly compositional syntactic system, with morphemic elements that can be combined and arranged to form potentially very complex and novel multi-layered sentences.
- (2) Every human language also has a richly compositional prosodic system, with phonological elements that can be combined and arranged to form potentially very complex multi-layered utterances.
- (3) Prosody is the “phonological patterning” counterpart to syntax in Hockett’s specification of “duality of patterning” [8,9] (DoP) as the universal design feature that may differentiate human languages from the communication systems of other species. However, the universality of DoP is obscured if phoneme-sized segments are axiomatically assumed and described as the “building blocks” of morphemes, as in Martinet’s “double articulation” [10], a theory of design features that is often (incorrectly) equated with DoP.
- (4) The incorrect equation of Martinet’s theory of “double articulation” with Hockett’s theory of “duality of patterning” also obscures evidence of how DoP develops in ontogeny and of how DoP might have emerged in the phylogeny of our species.

The evidence that (1) is true of signed as well as spoken languages comes from studies of emerging languages such as ABSL and Nicaraguan Sign Language, where syntactically complex structures such as conditionals and also conventionalized agreement morphology have emerged within a single generation of early signers [11].

The evidence that (2) is true of signed as well as spoken languages also comes from emerging languages, and there is evidence of productive complexity for at least three levels of structure. First, manual gestures can be decomposed into specifications for the properties listed in (5), and a unit analogous to the syllable in spoken languages can be defined by coordinated changes in (at least one of) location, finger position, and orientation. Second, in all sign languages studied to date, content words are typically monosyllabic, but longer forms (e.g., disyllabic compound words) can be marked as prosodic words by phonological processes of reduction and/or spreading. Third, even the youngest sign languages have rich “visual intonation” systems by which non-manual gestures are aligned to the sequence of manual gestures so as to demarcate prosodic units comparable to the intonational phrases of spoken languages, as illustrated in Figs. 1 and 2.

(5) features in ASL	example of minimal pair or of sign with changing specification
handshape	[of dominant hand (H1) or of both hands (H1&H2) in some signs]
selected fingers	SCHOOL (all 5 fingers) vs. IM,POSSIBLE (thumb & pinky)
finger position	WHITE (all 5 fingers begin spread and then close to touch)
orientation	STAY (both palms up) vs NOW (both palms down)
location	ONION (at side of right eye) vs. APPLE (at right of chin)
endpoint	SCHOOL (H1 moves down from neutral space to touch H2)
movement type	NUDE (1 large movement) vs. AVAILABLE (2 short movements)

The evidence for (3) stems from a close reading of relevant parts of [8,9], and the realization that the argument against DoP in ABSL [7] is actually an argument instead against Martinet's theory. (There will be no time to review the evidence for (4), which is part of the larger idea that has been developed in more detail elsewhere [12,13].)

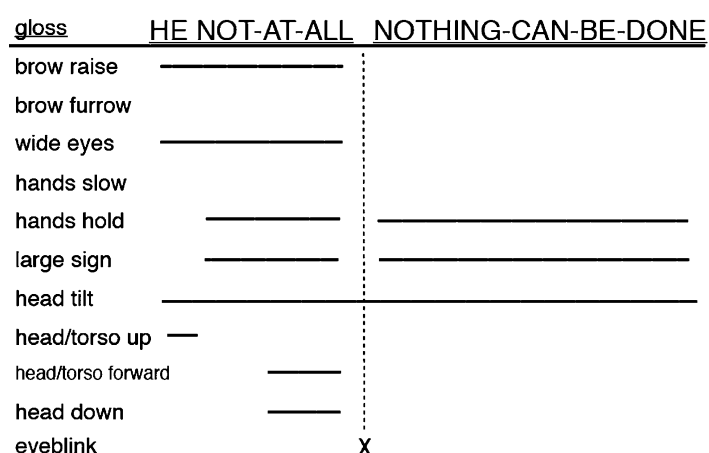


Fig.1 Display of the time-aligned tags for gestures of “visual intonation” of an ABSL utterance meaning ‘If he says no, then nothing can be done.’ (extract from Fig. 5 in [7]).

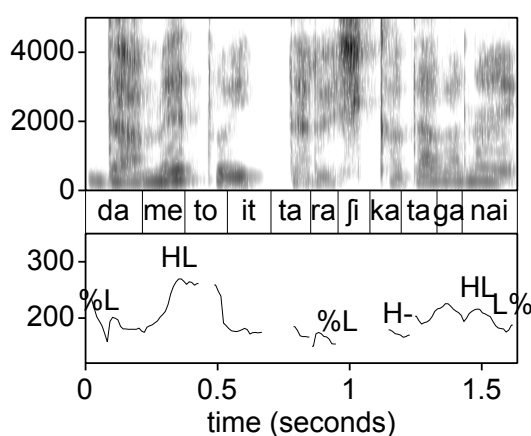


Fig.2 Display of a commonly used acoustic measure of “intonation” in an utterance of a Japanese translation of utterance in Fig. 1.

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