

Grammaticalization of facial intonation: The case of squint in ISL relative clauses

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Intonation helps to organize speech into rhythmic tunes and conveys discourse functions and relations such as sentence type, speech act and focus. It has been hypothesized that linguistic intonational components of spoken languages were conventionalized from non-linguistic signals and further grammaticalized in the course of evolution (Gussenhoven 2004, Janzen 1999 *inter alia*). Contemporary spoken languages cannot provide a testing ground for this hypothesis due to their old age. However, a young sign language such as Israeli Sign Language, is perfectly suited to this purpose (Meir and Sandler 2004). In signed languages the functions of intonation have been argued to be performed by facial expression (Sandler 1999). The present study tracks the change of an intonational component -- squinted eyes -- across generations of ISL signers. This signal begins as a pragmatic device for establishing shared information and is transformed to a relative clause marker.

In spoken languages, three main diagnostic criteria of grammaticalization have been identified: frequency of occurrence, semantic change, and phonological reduction (e.g., Hopper and Traugott 1993). For example, *to be going to* through its development first as the marker of intention and then of future not only changed its function, but also became very frequent in the discourse and underwent phonological reduction to *gonna* (Danchev & Kyto 1994). In this study, evidence is presented for intonation grammaticalization based on all three criteria.

In order to identify changes across generations, ISL data were collected through an interactive task constructed to elicit responses that are functionally equivalent to relative clauses. The responses were videotaped from three groups of ISL signers: ages 20-35, 36-50, and 51+. This methodology is based on the apparent time hypothesis, which infers diachronic changes from synchronic data collected from different age groups (Labov 1963). The signers' facial articulations and head movements were coded with Ekman and Friesen's (1978/ 2002) anatomically based Facial Action Coding System (FACS).

The present study focuses on the narrowing of the eye aperture, or squint. Previous work on ISL has shown that this signal appears mostly on topics and relative clauses, and is analyzed as an instruction to the addressee to retrieve information that is not readily accessible (Dachkovsky and Sandler 2009).

In order to test the hypothesis that intonational components are grammaticalized across generations, the behavior of squint was analyzed according to the grammaticalization criteria mentioned above. The results demonstrate that squint is used differently by different age groups along all three dimensions:

a) **Frequency** -- squint occurs twice as often in the responses of the younger two age groups (80 %) than in the older group (39%).

b) In order to track the **meaning change** of squint we looked at its distribution in the responses, since elements change their structural position as they begin to fulfill different semantic functions (Eckardt 2006: 4). In the responses produced by the younger and middle-aged signers, squint co-occurs with the whole relative clause in more than eighty per cent of all the

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