Typology of cardinal numerals and numeral incorporation in sign languages

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Introduction

The iSLanDS Sign Language Typology project has been set up with the aim of developing (1) typologically informed documentation of linguistic diversity across sign languages, (2) empirically substantiated generalizations leading towards a theory of variation, (3) re-assessment of the relationship between signed and spoken languages. The project focuses on three domains: number, colour and kinship terms.

A comparative cross-linguistic study of number structures has now been undertaken, and preliminary findings reveal similarities and differences for cardinal numerals and numeral incorporation across signed languages.

Cardinal number systems

Sign languages use several different systems to express cardinal number. These include use of the following strategies: additive (94: NINETEEN FOUR), subtractive (94: SIX LESS 100), multiplicative (including numeral incorporation), and spatial modalization (see below). Half of the sign languages in the survey also use a digital strategy (94: NINE FOUR). Additive and multiplicative strategies are used by around two-thirds of sign languages to express the categories that we have looked at (1-19; multiples of 10, 100, 1000; and large numbers), but other strategies (such as subtraction and spatial modification) are much rarer cross-linguistically.

Options for expressing numerals cross-linguistically

- While 27 sign languages use the O-hand or F-hand to express ‘0’, there are four sign languages that use other variants, including the S-hand and the C-hand.
- For numbers ‘6’ to ‘9’, sign languages have been grouped as using either one or two hands, and the number of sign languages in each group is almost the same. For three sign languages, it seems possible to use a mix of one and two hands for these numbers, or the second hand is optional.
- There are often several options for expressing ‘10’.
- Of the sign languages for which data are available, almost two-thirds use separate lexical forms to express ‘11’ and ‘12’. Two sign languages use digital strategies to express ‘11’ and ‘12’, while 15 use additive strategies and numeral incorporation. For 13-19, lexical forms are much rarer.

Base numbers

The vast majority of sign languages are base-10 (and some have sub-base 5), but a few sign languages have been found to use other bases too. For example, Chican Sign Language and Mardin Sign Language use base 20, while these and Alipur Sign Language also use base 50).

Lexicalisation

Several number signs show evidence of having undergone a process of lexicalisation, following compound formation rules (Liddell and Johnson 1986). For example, the number ‘25’ in ASL can be signed in at least two different ways, as separate signs (TWO FIVE) or as a lexicalised sign (see below for this, and other examples).

Iconicity

Iconic structures exploit the physical resemblance between linguistic items and their meanings (Taub 2001:8). These structures have several sources, which may include body parts, such as fingers and toes. Further sources for other iconic numeral signs include currency and sign names.

Numeral incorporation

One cross-linguistically common form entails the production of a sign from a certain paradigm, using the handshape of the sign from the corresponding cardinal numeral, which is known as numeral incorporation (Liddell 1996). Numeral incorporation is used by nearly all sign languages, and is often highly productive, functioning with a large range of parameters. The table on the left shows the sign languages that have paradigms in the domains of time, money and school grade.

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References