

# Deconstructing the links of addition

## 1. The typological analysis of numerals

An internal typology of numerals may ignore all markers of external categories. Complex numerals like French *vingt-quatre* or German *neun Millionen* consist of two types of constituents:

- Units expressing a value, e.g. 20 *vingt*, 4 *quatre*, 1.000.000 *million*
- Other elements like *and* ‘ADD’ or *-en* ‘MULTIPLY’, expressing relations.

The relations between values conform to arithmetical operations. Nearly always, sequent numerals constitute patterns, the most common types being serial multiplication (20, 30...60 *vingt, trente...soixante*) and serial addition (21...29 *vingt-et-un...vingt-neuf*). In series, the constant part –in addition the augend– may be formally distinguished from the variable parts. There is no similar asymmetry in other sum types, restricted to short sequences or single occurrences.

## 2. The links of addition known so far

Greenberg (1978:264-6) calls an “overt morphemic expression of an operation” a *link*. His classification of simple additive links has been generally accepted without further research (Hurford 1987, Heine 1997, Greenberg 2000): the most common is juxtaposition, followed by “comitative” links meaning ‘and’ or ‘with’. Other rare types: superessive (‘upon’, ‘over’), possessive links, and expressions for additional objects (‘extra’, ‘left’).

## 3. My typological study

From a diachronic viewpoint, the non-numeral meaning of elements hints to the conceptual source of the respective construction. I checked prior typological results with a world-wide sample of 281 languages (Hanke 2005).

#### **4. The results**

It is confirmed that unmarked addition is most common, followed by coordination. As Greenberg correctly stated, only these symmetric constructions are used in all types of sums.

I have not found a single case of a “pure” comitative like \**twenty with three* – comitatives are only an indirect source via coordination.

The superessive is the most common of a whole cluster of locative sources, including dynamic concepts, and even ‘lying, under’, explicitly excluded by Greenberg. The augend is always coded like a ground object.

The possessive type includes different source concepts. Besides ‘extra’, expressions like ‘already’, ‘else’ occur.

Greenberg’s generalization, that with ‘left’ augends are always omitted, is apparently based on Germanic and Baltic evidence with ‘left’ only for +10, cf. *eleven, twelve* < ‘1-left, 2-left’. The hypothesis is easily falsified by an independent case of ‘remain’ up to 99.

In some numeral systems, augends based on expressions for ‘hand’, ‘side’, ‘foot’ etc. combine with a variety of additive constructions including specific ones.

#### **5. General conclusions**

Additive constructions often use simple links, but are not limited to them. More than thought before, numeralization is comparable to the grammaticalization of constructions.

#### **References**

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