

Is It ‘three hundred’ or ‘hundred three’?
An Exploration of the Worldwide Distribution of Numeral Base Orders
in Human Languages and Its Implications

One-Soon Her
Department of Foreign Languages and Literature, Tunghai University

A complex numeral with a multiplier and multiplicand has two orders, as the multiplicand, *aka* numeral base, either follows or precedes the multiplier, dubbed base-final, e.g., *three hundred* [three × hundred] in English, and base-initial, e.g., *ikie ita* [hundred × three] in Ibibio (Niger-Congo). This study will explore the significant implications of this typological variation in the world’s languages, which have never been investigated meaningfully. The foundation of this exploration is the database WACL (*The World Atlas of Classifier Languages*) (Her *et al*, in press), which has been methodically constructed in the past ten years and now has 3911 languages with information on the presence/absence of numeral classifiers and classifier word order, presence/absence of numeral bases and base order, genealogical position, geographical coordinates, population size of native speakers, and some of its important references. It is by far the biggest database with such information. Figure 1 is a GIS map showing the distribution of the 3911 languages in terms of four types of numeral systems: base-final, base-initial, base-split, and no-base.

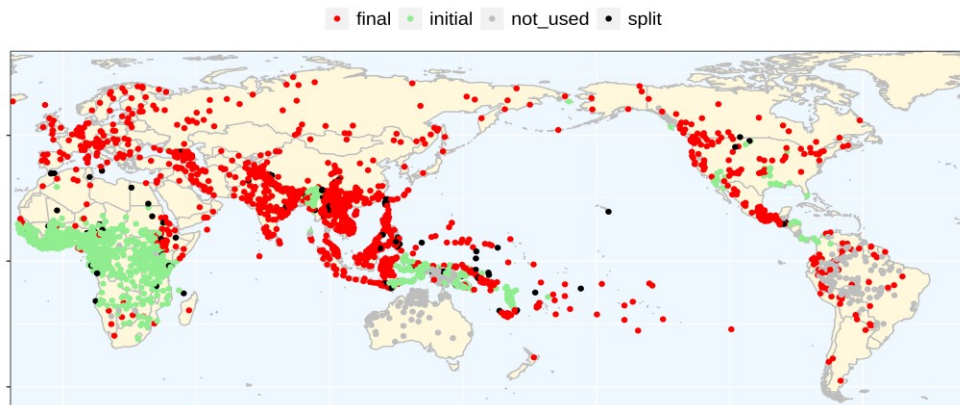


Figure 1. Worldwide distribution of numeral systems in 3911 languages

This map is historic in that it is the first ever world map with a significantly large number of numeral systems of human languages represented in terms of the use of numeral bases and base orders. It also demonstrates for the first time that the pattern of distribution of the four types of systems does not seem to be random. This map thus gives us the strong and enticing motivation to first systematically examine the patterns of the distribution of the four types of languages and then to explore the possible causes for such a pattern of global distribution.

The study has two goals. First, we intend to collaborate with Eugene Chan, host of the website [Numeral Systems of the World's Languages](#), which has the raw data of the numeral systems of more than 4,700 languages, by far the world’s largest, and expand WACL. The second, and much more ambitious, goal is to account for the patterns of distribution of the four types of numeral systems. We put forth six hypotheses (HP) to solve this jigsaw puzzle.

- HP1: ‘Out of Africa’ numeral systems are base-initial.
- HP2: Spread of base-initial systems is due to vertical heritability.
- HP3: Some base-initial systems switched to base-final due to writing systems.
- HP4: Other languages switched to base-final due to horizontal diffusion.
- HP5: Base-split systems are in a transitional initial-to-final state.
- HP6: No-base systems lost numeral bases due to unnecessary.

In this talk, I shall try to justify their plausibility and explain the methodologies we intend to use to verify them.