# *ЛИНГВИСТИЧНА ТИПОЛОГИЯ.*
# *СЪПОСТАВИТЕЛНО ЕЗИКОЗНАНИЕ*

## FIFTY-EIGHT

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**Abstract.** Numerals, especially non-round ones beyond the first decade, are often neglected in descriptions of languages. Yet their formation is an area in which languages vary significantly and in interesting ways. Focussing on the number 58, we analyse its names in a genealogically balanced sample of 720 languages, classifying them by several features, and consider the geographical distribution of the various values of those features and their associations with one another and with other grammatical parameters. Finally, we address the relation between the number system and the colexification of 'finger/toe'.

**Keywords:** *numerals; typology; universals; word formation; word order*

## 1. Introduction

Numerals appear to be one of the least favourite topics in linguistics, especially in its descriptive varieties. Authors of reference grammars often do not discuss their construction at all, relegating them, explicitly or not, to the lexicon. Authors of dictionaries frequently list the numerals that are single words but often have nothing to say on how composite number names are built. Many lists and databases of numerals limit themselves to numbers from one to ten, or to round tens up to a hundred, ignoring the ones in between.

Yet a number is simply a concept in need of verbal expression, subject to semantic decomposition and recomposition. A language can choose to call 16 either 10+6, as Turkish does, or 15+1, as Mixtec does (Williams 2007: 36), in essentially the same way as it can choose between 'big toe' and 'foot thumb' or 'younger brother' and 'male junior' (Table 1).

**Table 1.** Semantic decomposition: how languages differ

| Turkish | *on 'ten'* | | *altı 'six'* | | English | *younger* | *brother* | |
|---|---|---|---|---|---|---|---|---|
| | ●●●●●●●●●● | ●●●●● | ● | | | younger | sibling | male |
| Tezoatlán Mixtec | *sa'on 'fifteen'* | | *iin 'one'* | | Thai | *nɔ́ɔŋ* | | *chaay* |

Or take 58. A mathematician might not find much of interest about it, save perhaps that it is the sum of the first several (namely seven) prime numbers: $58 = 2+3+5+7+11+13+17$ (OEIS 2024 s.v. A007504). To a linguist what is interesting is the staggering variety of ways in which a language can choose to decompose it and then compose an expression for it. It is small enough to have names in many languages, yet too large to ever have a monomorphemic name. And as we shall see, it has a strong claim to being the number with the greatest variety of models according to which it is named.[1]

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[1] A reviewer rightly observes that this bold superlative wants an explanation. Admittedly no exhaustive search was carried out, but the reasoning is as follows. Since the great majority of languages operate base-10 or (as a distant second) base-20 numeral systems (Comrie 2013), most models by which a number can be named reflect a representation of this number as a quantity of tens or scores and an offset in units. For example, 63 is 6×10+3 or 3×20+3; 69 is similarly 6×10+9 or 3×20+9, but also 7×10−1, and thus it can be expected to have more models; 39 = 1×20+19 can be either 1×20+10+9 or 1×20+15+4; in 59 = 50+9, in addition to 5×10 or 2×20+10, 50 can be expressed as ½×100. And in 58, both 8 and 18 can be analysed in ways which have no analogues within their close neighbourhoods (2×4, 4+4; 2×9, 3×6). Hence, its claim to the record.

## 2. The experiment

For this study 720 languages were selected, featuring a total of 782 names for 58, and 103 models by which they are formed. A model here is the arithmetic expression which reflects the literal meaning of the numeral, regardless of the order and choice of words. Thus, Lamani (Lambadi, Lambani) appears to have four names for 58 – *pacās an āṭ* '50 and 8', *pacāse par āṭ* '8 on 50', *di kam sāṭ* '2 less 60', *sāṭ kam di* '60 less 2' (Trail 1968: 119ff; Tabassum 2019: 68ff) – and these illustrate two models between them, 5×10+8 and 60−2.

Here is how the languages were chosen:

- A language in which a unique model was found was always included, even if this model coexists in the language with other more common ones. Such is the case of Welsh, which has four ways of naming 58, among them *pumdeg wyth* 5×10+8 (King 2016: 139), the most common model worldwide, but also *deunaw a deugain* 2×9+2×20 (Awbery 2009: 420), seen nowhere else.
- A genealogical balance was sought: the number of languages representing a taxonomic unit in the sample (say, 9 Turkic, 3 Tungusic) aimed to being proportional to the number of languages in the unit according to Glottolog (here 43 and 15, respectively). Language isolates had a priority.
- A geographical balance was sought. An equal representation of all macroareas was out of the question, but still the sample contains
  ◦ 180 languages of Eurasia,
  ◦ 180 languages of Africa,
  ◦ 179 languages of Papunesia and 1 language of Australia, namely Gumatj, which is reported to have an authentic number system going well beyond 58 (Harris 1982: 169 – 171), counted together with Papunesia here,
  ◦ 180 languages of the Americas, including
  ◦ 80 of North America,
  ◦ 60 of Central America,
  ◦ 40 of South America.
- All other things being equal, languages better documented in WALS (that is, with values set for more features) had a priority.

Figure 1 shows the 720 languages on the world map, colour-coded by macroarea. The complete list, ordered lexicographically by their classifications in Glottolog, from Abkhazian (abkh1242/abkh1243/abkh1244) to Wappo (yuki1242/wapp1239), and with the isolates last, is given in the Appendix.
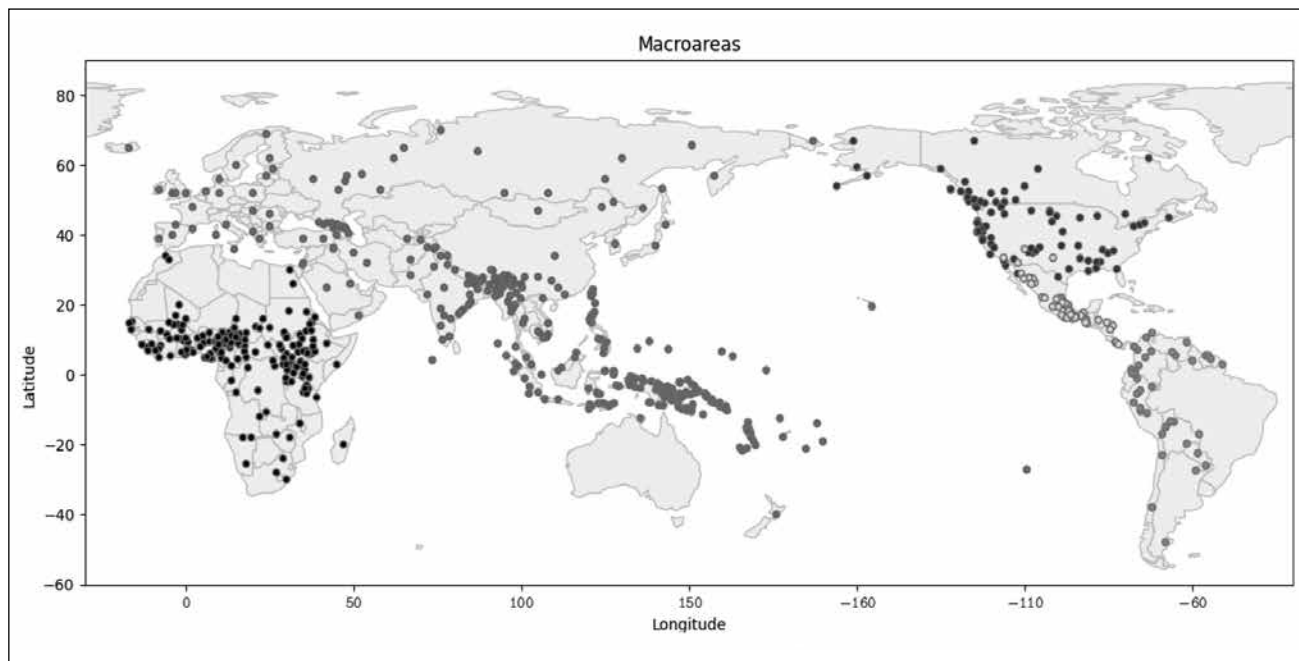


**Figure 1.** The 720 languages on the world map

As was said above, some languages have more than one name for 58. Kabardian holds the record with five names: *pŝîtxură iră* '10×5+8', *txuŝ̂ră iră* '5×10+8' (these two pertain to the same model, as they only differ in the order of multiplicands), *pḷəŝ̂ră pŝəķ̂ijră* '4×10+(10+8)', *ṭoŝîṭră pŝəķ̂ijră* '((2×10)×2+(10+8)' (Турчанинов, Цагов / Turchaninov, Cagov 1940: 65 – 67), *ŝănəq̂ără iră* '100×½+8' (Кумахов / Kumahov 2013: 676). But all languages had the same weight of 1, divided equally between the numerals a language features. Thus, each of the Welsh numerals contributes a weight of ¼ to its model, each of the Kabardian ones of 1/5, etc. For the sake of convenience, however, we will talk about numbers of languages even if they are not integer.

By far the most common model is 5×10+8 (337.15 languages, or 47%). A distant second is 5×10+(5+3) (71.5, or 10%), followed by 50+8 (36.33, or 5%) and 2×20+10+8 (28.83, or 4%). There are 63 models with a weight of no more than 1 (48 of exactly 1, 13 of ½, two of ⅓, and one – Welsh *deunaw a deugain*, mentioned above – of ¼).

### 3. Features

Short of having a number system with a base greater than or equal to 58, or equal to 29, neither of which occurs in the sample, a language must use at least one additive operation in its name for 58. That is, the minimal formula expresses it as a multiple of the base plus (or, rarely, minus) an offset. Overcounting is also an option, as in (Northern) Mansi *xōtpan nopəl ńololow* '60 towards 8' (Ромбандеева / Rombandeeva 1973: 91ff).

The multiple of the base tends to involve multiplication, unless it has its own name, though 50 can also be obtained by halving 100. Halving occasionally serves other purposes too, as in Cahuilla *nemaqwánangis nemichúmi peta' qunpáh* 'hands.half times hands.finished [i. e., (10×½)×10 = 50] upon 5+3' (Sauvel, Munro 1981: 82f), or (with overcounting) Danish *otteoghalvtreds* '8 and ½ of 3 [20s] = 8+2½×20 = 58'.

If the number is decomposed as 50+8, the offset is 8, which often has a primitive name, but may also be named 5+3, 2×4, 4+4 or 10−2 (occasionally other things as well). If as 40+18, the offset 18 may be treated as 10+8, but 15+3 is also common.

Thus, these are the questions we ask about a name for 58:

1. Is the number decomposed as 50+8, 40+10+8, 40+18, 60−2 or something else?
2. What (if any) is the greatest number among {10, 20, 40, 50, 60, 100} that is involved and has a primitive name?
3. Is multiplication involved, and if so, how are the factors ordered?
4. Is addition involved, and if so, how are the terms ordered?
5. Is subtraction involved, if so, how are the terms ordered, and is the minuend expressed or implied?
6. Is overcounting involved, and if so, how are the terms ordered?
7. Is halving involved?
8. Is the number 8 involved, and if so, does it go by a name of its own or as 5+3, 2×4, 4+4, 10−2 or something else?
9. Is the number 15 involved (under any name)?

### 4. Observations

The questions listed above do not directly identify the base of the number system, but the answers to the first two are strongly associated with it and also (with a *p*-value of the chi-square test of $2.3 \times 10^{-139}$) with one another (Table 2).

**Table 2.** The two parameters directly related to the base of the number system

|       | 10     | 50    | 100  | Nil   | 60   | 40   | 20     |
|-------|--------|-------|------|-------|------|------|--------|
| 50+8  | 453.32 | 44.33 | 6.28 | 22.83 | 1    | 3.5  | 5.83   |
| alia  | 1.33   | 0     | 0    | 13.5  | 0.5  | 0    | 0      |
| 60−2  | 2.5    | 0     | 0    | 0     | 1.17 | 1    | 4.5    |
| 40+18 | 2.4    | 0     | 0    | 1     | 0    | 6.25 | 148.75 |

The association is broken when a language combines features of different systems. We saw that Kabardian decomposes 58 as 40+18 in two ways without using a primitive name for 20 or 40. Conversely, in Western Highland Chatino 58 is *tu'wa tyii nduwa snu'* 40+10+8, which has to be read as (40+10)+8 = 50+8, not as 40+18, because 18 is *ti'yun xnan* 15+3 (Pride, Pride 2010: 187). Danish *otte·og·halv·tred·sinds·tyve* likewise stands for 8+50, but the 50 is expressed as 2½ (by overcounting, ½ towards 3) times 20.

The same two parameters also correlate with the macroarea, confirming that Mesoamerica is the home of vigesimality and Papunesia (which includes New Guinea) of non-decimal/vigesimal systems (Table 3).

**Table 3.** … and their association with the macroarea

|  | 40+18, 60−2 | alia | 50+8 | 20, 40 | 60, nil | 100, 50, 10 |
|---|---|---|---|---|---|---|
| Mesoamerica | 42.17 | 0 | 17.83 | 46.67 | 0.5 | 12.83 |
| Papunesia | 42.5 | 12.5 | 125 | 42.5 | 25 | 112.5 |
| elsewhere | 82.9 | 2.83 | 394.27 | 80.67 | 14.5 | 384.83 |

The use of the name for 15 for constructing one for 58 is very much a Mesoamerican phenomenon, characterising 23.3% of the numerals from that area (Table 4); contrariwise, in Eurasia we only see it in the Chukchi numeral *ŋireqqlikkin kəlgənken ŋəroq parol* '2×20 15 3 extra' (Скорик / Skorik 1961: 390) and one of the four Welsh ones, *tri ar bymtheg a deugain* '3 and 5+10 and 2×20'.

**Table 4.** Is the number 15 involved in naming 58 in each macroarea?

|  | Mesoamerica | Papunesia | Africa | North America | Eurasia | South America |
|---|---|---|---|---|---|---|
| Yes | 14 | 11 | 3.5 | 1.5 | 1.25 | 0 |
| No | 46 | 169 | 176.5 | 78.5 | 178.75 | 40 |

Eurasia also strongly prefers to have a primitive name for 8, and is very reluctant to represent it as 5+3, as is common in Papunesia. In Africa it is often 4+4; in North America and Mesoamerica, 2×4 (Table 5).

**Table 5.** How is the number 8 (if used in 58) named in the macroareas?

|  | 4+4 | 5+3 | nil | 10−2 | 2×4 | own word |
|---|---|---|---|---|---|---|
| Africa | 14 | 47 | 8 | 7 | 4 | 100 |
| Americas | 3 | 50.5 | 5.5 | 7 | 16 | 98 |
| Eurasia | 0 | 3.25 | 7.75 | 8 | 5 | 156 |
| Papunesia | 0 | 72 | 15 | 8 | 4.5 | 80.5 |

As has been noted (Hammarström 2010: 17), the position of the lesser multiplicand before the greater one (typically the coefficient before the base) correlates with the placement of the numeral before the noun. And since ordering relations are birds of a feather, it also flocks together with the position of the demonstrative and the adjective before the noun, the degree word before the adjective, and the subject after the verb, as well as with an initial interrogative phrase in content questions and initial rather than final polar question particle and with marking plurality with a suffix (Table 6).

**Table 6.** Multiplication and other ordering parameters

|  | L×G | G×L |  | L×G | G×L |
|---|---|---|---|---|---|
| Numeral-Noun | 219.17 | 9.5 | Verb-Subject | 76.5 | 8.5 |
| Noun-Numeral | 59.83 | 204.67 | Subject-Verb | 218.23 | 239.27 |
| Demonstrative-Noun | 181.07 | 42.77 | Initial interrogative phrase | 95.5 | 17.5 |
| Noun-Demonstrative | 97.5 | 167 | Not initial interrogative phrase | 141.73 | 160.77 |
| Adjective-Noun | 132.67 | 19 | Initial question particle | 54 | 7.5 |
| Noun-Adjective | 154.83 | 208.17 | Final question particle | 66.5 | 99.17 |
| Degree word-Adjective | 112.5 | 15.5 | Plural suffix | 155.4 | 63.6 |
| Adjective-Degree word | 49 | 57 | Plural prefix | 15 | 42.5 |

The infrequent position of the lesser addend before the greater one also correlates with the placement of the numeral, demonstrative and adjective before the noun, although here the relationship is weaker (Table 7).

**Table 7.** Addition and other ordering parameters

|  | Num-Noun | Noun-Num | Dem-Noun | Noun-Dem | Adj-Noun | Noun-Adj |
|---|---|---|---|---|---|---|
| L+G | 23.08 | 4 | 18.33 | 6.25 | 15.83 | 11.75 |
| G+L | 240.25 | 269.5 | 237 | 273.75 | 165 | 370.25 |

Although subtraction is a rare operation, there is a tendency for the subtrahend to precede the minuend (say, 2¬60 rather than 60−2), or if the minuend is unnamed but implied (as when the name of 8 is derived from 2, meaning 2−[10]) for the operation to be expressed by a marker postposed to the subtrahend, in languages with postpositions (Table 8). Since some languages use verbal expressions for expressing subtraction, one might expect a similar association with the order of object and verb and subject and verb, but especially with the latter that does not work out so well.

**Table 8.** Subtraction and other ordering parameters

|  | Po | Pr | OV | VO | VS | SV |
|---|---|---|---|---|---|---|
| L–G | 6.33 | 1 | 5.33 | 2 | 0 | 8.33 |
| L–[G] | 9.5 | 5 | 6.5 | 12 | 5 | 13.5 |
| G–L | 2.83 | 2.5 | 1.83 | 3.5 | 0 | 5.33 |
| [G]–L | 2 | 6 | 2 | 8 | 1 | 10 |

Looking back at geography, the prevailing orders of the operands of multiplication, subtraction and addition (lesser before greater or the opposite) are all features in which Eurasia parts ways with Africa and Papunesia, whilst the Americas vary (Table 9).

**Table 9.** Order of operands of arithmetic operations by macroareas

|  | L×G | G×L | L¬G | G–L | L+G | G+L |
|---|---|---|---|---|---|---|
| Eurasia | 132.4 | 16.27 | 10.33 | 0.83 | 21.08 | 154.75 |
| North America | 63 | 16 | 7 | 0 | 0 | 79 |
| Meso- and South America | 77.67 | 11 | 1 | 0 | 4.5 | 94.5 |
| Africa, Papunesia | 109 | 219.5 | 9.5 | 16.5 | 8.5 | 345 |

## 5. Fingers and Toes

The source of the distribution of decimal and vigesimal counting across languages has been under debate for some time. Is it directly related to the accessibility of the lower part of the natural human abacus? This may appear problematic:

> It is striking that it is precisely in the north, in Iceland, Denmark and England, that the 20-some is most firmly rooted. When we think of the counting gestures, we would expect it to be particularly at home in places where people go unshod and can actually count on their toes. Well, the Eskimo, who likes to count in 'people', cannot do that at all.

(Menninger 1958: 63; translation ours)

There follows a conjecture that it is enough to know the total number of one's fingers and toes, whether all of them are open to scrutiny or not.

Failing to understand what *zu Hause* 'at home' refers to in this passage, another author accuses Menninger of 'a naïve speculation that in Iceland, Denmark, England, where people were able to walk

unshod at home, counting might be done on the toes as well' (Эдельман / Edelman 1975: 33). The error is repeated 24 years later, with a change of perspective: the illusory speculation is now ascribed to 'some scholars', and Menninger is supposed to accept it in general but present the Eskimo as a counterargument (Edelman 1999: 230).

Misreading a German idiom is not a terrible sin, although it is strange that Edelman has remained unaware of this for so long. Yet serendipity can strike out light. Never mind where the vigesimal count is at home. Can't the Eskimo strip their feet at home? Snow, the stuff the igloo is made of, is known to be an excellent heat insulator. In fact, the Soviet writer Tikhon Syomushkin, who had first-hand experience of Chukotka, reports in his novel of the same title (1939–1941) that elderly Chukchi sometimes do take off their shoes 'for greater convenience' when counting (which they do not do often anyway). Perhaps more to the point, outdoors the upper half of the natural abacus, too, is unlikely to be available, as not only footwear but also handwear is indispensable in cold weather. (The lines about Hiawatha's mittens and about his moccasins near the beginning of Chapter IV of Henry Longfellow's famous poem are remarkably parallel.)

So it appears that the hypothesis 'The decimal system is primarily at home where closed-toe shoes are commonly worn' should be reformulated as 'The decimal system is at home where shoes are commonly worn but mittens are commonly not'. Its verification is still an open question, but at least this makes the Eskimo (and Chukchi) less of an enigma.

The debate referred to above takes a different direction, relating the choice of base for the number system to the use of the same word or of different ones for 'finger' and 'toe' (Эдельман / Edelman 1975: 35; Edelman 1999: 231). The argument is that for people to come up with a base-20 system, they need to have a common name for their 20 digits and not be compelled by language to think of them as 10 fingers and 10 toes. This has been criticised as being based on cherry-picked examples (Melenchenko 2022: 44). Our collection of 'finger' and 'toe' terms is less voluminous than on the number 58 – it covers 450 of our 720 languages – but it is certainly not cherry-picked. Its being synchronic, not historical, reduces its relevance to the question of origin and development of number systems somewhat, but still we can see what we can see and how it compares to the hypothesis.

It should be noted that a language actually has three options: it can have a single word or two unrelated ones for 'finger' and 'toe' or it can call them 'hand/foot's δ', where δ stands for 'child', 'flower', 'seed', 'strand', etc. (but does not mean 'digit' on its own).

Figure 2 presents the distribution of these options on the world map, and Table 10 summarises it by macroareas. One can see that North America is the only place where the full separation of 'finger' and 'toe' is the most common strategy (and even there not by a big marge). Calling them 'hand/foot δ' is especially characteristic of Mesoamerica, and their colexification, of Eurasia and Papunesia.
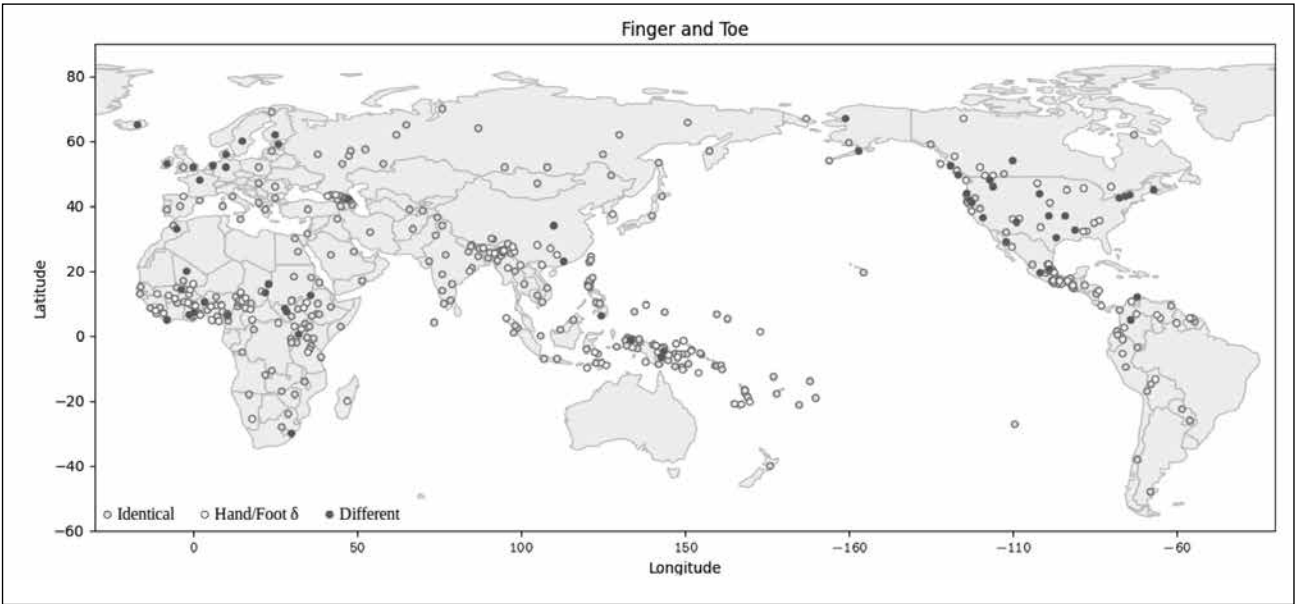


**Figure 2.** Finger/Toe on the world map

**Table 10.** Finger/Toe by macroarea

|  | Identical | Hand/Foot δ | Different |
|---|---|---|---|
| Africa | 53 | 43 | 15 |
| Eurasia | 91 | 21 | 13 |
| North America | 9 | 20 | 22 |
| Papunesia | 67 | 28 | 4 |
| Mesoamerica | 9 | 26 | 2 |
| South America | 14 | 11 | 2 |

It seems reasonable, in line with similar analyses of the lexification of 'finger' and 'hand' (Brown 2013a) and 'hand' and 'arm' (Brown 2013b), to expect the dislexification of 'finger' and 'toe' to be stimulated by traditional wearing of closed footwear, which enhances the visual difference between the two sets of digits, and that in turn perhaps by the climate and distance from the equator. We may note that languages which colexify 'finger' and 'toe' as well as 'hand' and 'arm', as well as languages with different terms for all these concepts, occur with a frequency greater than random (Table 11).

**Table 11.** Hand/Arm (WALS 129A) and Finger/Toe

|  | Finger ≡ Toe | Hand/Foot δ | Finger ≠ Toe |
|---|---|---|---|
| Hand ≡ Arm | 51 | 18 | 4 |
| Hand ≢ Arm | 46 | 30 | 27 |

Our observations do seem to confirm the role of the latitude in a way, with respect to the northern hemisphere at any rate. As Figure 3 (where the latitudes are divided into nine zones containing approx. 50 of our 450 languages each) shows, the use of unrelated words for 'finger' and 'toe' tends to grow as we go north. Their colexification, however, does not diminish; in the warmer areas more 'hand/foot δ' expressions are found.
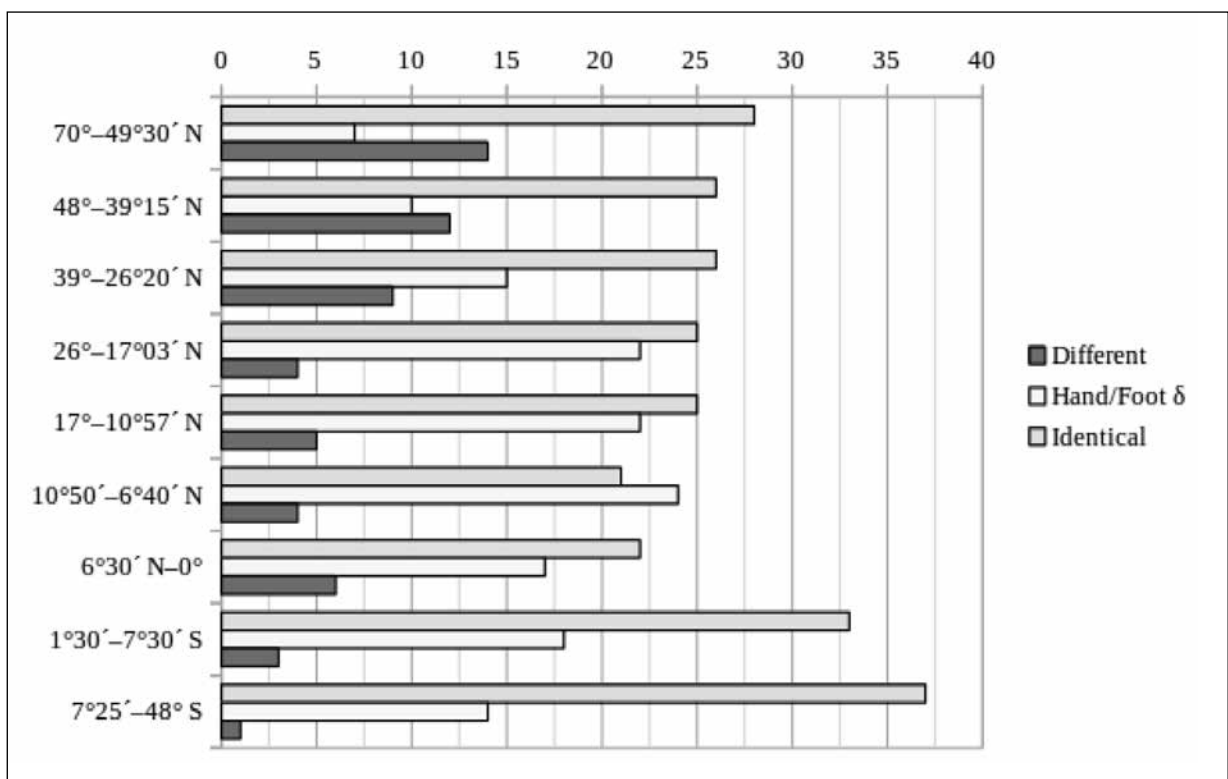


**Figure 3.** Finger/Toe and the latitude

Just as the use of a vigesimal number system and of 'hand/foot's δ' for 'finger/toe' are both associated with Mesoamerica, they are also associated with one another; a decimal system, by contrast, goes with having either a single word or two unrelated ones for 'finger' and 'toe' (Table 12).

**Table 12.** Finger/Toe and the base of the number system

|  | 50+8, alia | 40+18, 60−2 | 10, 50, 60, nil | 40 | 20, 100 |
|---|---|---|---|---|---|
| Identical | 207 | 36 | 204.25 | 4.5 | 34.25 |
| Different | 47.5 | 10.5 | 46.5 | 0 | 11.5 |
| Hand/Foot δ | 98.27 | 50.73 | 93.63 | 4 | 51.37 |

Even if the two kinds of lexical differentiation of the concepts are counted together, we have the same verdict: languages with decimal systems tend to have the same term for upper and lower digits, and with vigesimal systems, different (though often related) ones.

This is the exact opposite to Edelman's hypothesis and observations. But again, we do not focus our study on number systems formed spontaneously, nor make any adjustments to discount the (undoubtedly formidable) results of language contact.

## References

Awbery 2009: Awbery, G. Welsh. – In: Ball, M. J., N. Müller (Eds.). *The Celtic Languages*, ch. 9, pp. 359 – 426.
Brown 2013a: Brown, C. H. Finger and Hand. – In: *WALS Online*. <http://wals.info/chapter/130> [20.12.2024]
Brown 2013b: Brown, C. H. Hand and Arm. – In: *WALS Online*. <http://wals.info/chapter/129> [20.12.2024]
Comrie 2013: Comrie, B. Numeral Bases. – In: *WALS Online*. <http://wals.info/chapter/129> [27.02.2025]
Edelman 1999: Edelman, D. I. On the History of Non-decimal Systems and Their Elements in Numerals of Aryan languages. – In: Gvozdanović, J. (eds.). *Numeral Types and Changes Worldwide.* Trends in Linguistics. Studies and Monographs, Vol. 118. Berlin, New York: De Gruyter Mouton, pp. 81 – 94.
Glottolog: Hammarström, H., R. Forkel, M. Haspelmath. 2022. *Glottolog 5.1*. Jena: Max Planck Institute for the Science of Human History. <https://glottolog.org> [27.02.2025]
Hammarström 2010: Hammarström, H. Rarities in Numeral Systems. – In: Wohlgemuth, J., M. Cysouw (Eds.). *Rethinking Universals: How Rarities Affect Linguistic Theory*. Berlin: De Gruyter Mouton, pp. 11 – 59.
Harris 1982: Harris, J. Facts and Fallacies of Aboriginal Number Systems. – In: Hargrave, S. (Ed.). *Language and Culture*. Work Papers of Summer Institute of Linguistics, Australian Aborigines Branch, Series B, Vol. 8. Darwin, pp. 153 – 181.
King 2016: King, G. *Modern Welsh: A Comprehensive Grammar*. 3rd ed. London, New York: Routledge.
Melenchenko 2022: Melenchenko, M. Features of Numeral Systems in East Caucasian Languages. – *Ms.*, DOI: 10.13140/RG.2.2.15446.32326.
Menninger 1958: Menninger, K. *Zahlwort und Ziffer. Eine Kulturgeschichte der Zahl*. 2. Aufl. Göttingen: Vandenhoeck & Ruprecht.
OEIS 2024: OEIS Foundation Inc. *The On-Line Encyclopedia of Integer Sequences*. <https://oeis.org> [14.03.2025]
Pride, Pride 2010: Pride, L., K. Pride. *Diccionario Chatino de la Zona Alta: Panixtlahuaca, Oaxaca y otros pueblos.* (Serie de vocabularios y diccionarios indígenas "Mariano Silva y Aceves", 47.) 2nd edn. México: Instituto Lingüístico de Verano.
Sauvel, Munro 1981: Sauvel K. S., P. Munro. *Chem'ivillu' (Let's Speak Cahuilla)*. American Indian Studies Center, University of California, Los Angeles.
Tabassum 2019: Tabassum, Z. *Descriptive Analysis of Lambani Syntax*. PhD thesis, Central University of Karnataka, Kadaganchi, Kalaburagi, India.
Trail 1968: Trail, R. L. *The Grammar of Lamani*. Poona: Deccan College.
WALS: Dryer, M. S., M. Haspelmath (Eds.). *WALS Online* (v2020.4) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.13950591. <http://wals.info> [20.12.2024]
Williams 2007: Williams, J. Ferguson de. *Gramática popular del mixteco del municipio de Tezoatlán, San Andrés Yutatío, Oaxaca*. (Gramáticas de lenguas indígenas de México, 9.) A.C.: Instituto Lingüístico de Verano.

Кумахов 2013: Кумахов, М. А. (гл. ред.). *Кабардино-черкесский язык*. Институт гуманитарных исследований Правительства КБР и КБНЦ РАН. (Kumahov 2013: Kumahov, M. A. (ed.-in-chief). *Kabardino-cherkesskij jazyk*. Institut gumanitarnyh issledovanij Pravitel'stva KBR i KBNC RAN.)

Ромбандеева 1973: Ромбандеева, Е. И. *Мансийский (вогульский) язык*. Москва: Наука. (Rombandeeva 1973: Rombandeeva, E. I. *Mansijskij (vogul'skij) jazyk*. Moskva: Nauka.)

Скорик 1961: Скорик, П. Я. *Грамматика чукотского языка. Часть первая: Фонетика и морфология именных частей речи*. Москва, Ленинград: АН СССР. (Skorik 1961: Skorik, P. Ja. *Grammatika chukotskogo jazyka. Chast' pervaja: Fonetika i morfologija imennyh chastej rechi*. Moskva, Leningrad: AN SSSR.)

Турчанинов, Цагов 1940: Турчанинов, Г., М. Цагов. *Грамматика кабардинского языка*. Москва: АН СССР. (Turchaninov, Cagov 1940: Turchaninov, G., M. Cagov. *Grammatika kabardinskogo jazyka*. Moskva: AN SSSR.)

Эдельман 1975: Эдельман, Д. И. К генезису вигезимальной системы числительных. – *Вопросы языкознания*, № 5, с. 30 – 37. (Edelman 1975: Edelman, D. I. K genezisu vigezimal'noj sistemy chislitel'nyh. – *Voprosy jazykoznanija*, № 5, pp. 30 – 37.)

## Appendix: List of Languages

**Abkhaz-Adyge (3):** Abkhazian, Kabardian, Ubykh. • **Afro-Asiatic (41):** Central Moroccan Berber, Tamasheq, Musgu, Buduma, Lagwan, Lamang, Marghi Central, Wuzlam, Gude, Mina (Cameroon), Tera, Kera, Lele (Chad), Masana, Hausa, Dera (Nigeria), Pero, Goemai, Mwaghavul, Ngas, Ngizim, Miya, Beja, Qimant, Sidamo, Eastern Oromo, Somali, Burunge, Iraqw, Coptic, Gulf Arabic, Egyptian Arabic, Maltese, Moroccan Arabic, Standard Arabic, Lishanid Noshan, Modern Hebrew, Amharic, Sebat Bet Gurage, Tigre, Mehri. • **Ainu (1):** Hokkaido Ainu. • **Algic (7):** Plains Cree, Malecite-Passamaquoddy, Eastern Ojibwa, Menominee, Siksika, Wiyot, Yurok. • **Anim (1):** Ipiko. • **Araucanian (1):** Mapudungun. • **Arawakan (6):** Lokono, Garifuna, Wayuu, Palikúr, Yanesha', Yine. • **Athabaskan-Eyak-Tlingit (6):** Navajo, Chipewyan, Slave, Hupa, Sarsi, Tlingit. • **Atlantic-Congo (77):** Kissi, Timne, Noon, Jola-Fonyi, Adamawa Fulfulde, Maasina Fulfulde, Wolof, Engenni, Noone, Ewondo, Luvale, Lunda, Ndonga, Kwangali, Bushoong, Lingala, South-Central Kikongo, Ndumu, Tonga (Zambia), Kikuyu, Ganda, Chiga, Haya, Kinyarwanda, Swahili, Asu (Tanzania), Zulu, Pedi, Southern Sotho, Shona, Nyanja, Tunen, Tiv, Bambili-Bambui, Vengo, Izere, Berom, Fyam, Yoruba, Ogbronuagum, Obolo, Khana, Gbagyi, Nupe-Nupe-Tako, Igbo, Jukun Takum, Hun-Saare, Ga, Aja (Benin), Fon, Ewe, Lelemi, Adioukrou, Akan, Anufo, Nkonya-Nkami, Mbum, Mundang, Mumuye, Doyayo, Banda-Bambari, Dongo, Sango, Mayogo, Baka (Cameroon), Zande, Gbaya-Mbodomo, Gbaya-Bossangoa, Konni, Bimoba, Ntcham, Mossi, Central Dagaare, Dagbani, Koromfé, Cerma, Supyire Senoufo. • **Austroasiatic (15):** Temiar, Semelai, Sedang, Koho, Chrau, Khasi, Shwe Palaung, Central Khmer, Mon, Bondo, Mundari, Santali, Sora, Car Nicobarese, Vietnamese. • **Austronesian (119):** Atayal, Amis, West Coast Bajau, Plateau Malagasy, Ibatan, Tboli, Lamaholot, Manggarai, Ngad'a, Kambera, Muna, Tukang Besi, Wolio, Pampanga, Kele (Papua New Guinea), Loniu, Lou, Fijian, Samoan, Rapanui, Hawaiian, Maori, Niuean, Tonga (Tonga Islands), Rotuman, Gilbertese, Mokilese, Woleaian, Kosraean, South Efate, Lewo, Port Sandwich, Neve'ei, Paama, East Ambae, Wanohe, Mwotlap, Longgu, Kwaio, Arosi, Dehu, Cemuhî, Tiri-Mea, Xârâcùù, Aneityum, Sie, Mussau-Emira, Bali-Vitu, Babatana, Halia, Teop, Hoava, Bannoni, Kokota, Kuanua, Siar-Lak, Tigak, Nakanai, Yabem, Patep, Lusi, Arop-Lokep, Maleu-Kilenge, Mbula, Sio, Ormu, Sobei, Kairiru, Manam, Gapapaiwa, Maisin, Tawala, Gumawana, Saliba, Sinaugoro, Motu, Lala, Kilivila, Yapese, Biak, Ambai, East Makian, Enggano, Cebuano, Hiligaynon, Mamanwa, Tagalog, Western Bukidnon Manobo, Javanese, Lampung Api, Bukar-Sadung Bidayuh, Acehnese, Western Cham, Iban, Minangkabau, Urak Lawoi', Indonesian, Tondano, Nias, Batak Karo, Batak Toba, Central Cagayan Agta, Central Bontoc, Batad Ifugao, Pangasinan, Timugon Murut, South Nuaulu, Alune, Palauan, Rejang, Ratahan, Buginese, Sundanese, Irarutu, Tetum, Leti (Indonesia), Paiwan, Rukai, Tsou. • **Aymaran (1):** Central Aymara. • **Baining (1):** Qaqet. • **Barbacoan (1):** Awa-Cuaiquer. • **Border (1):** Kilmeri. • **Bosavi (2):** Kaluli, Edolo. • **Caddoan (3):** Caddo, Arikara, Pawnee. • **Cahuapanan (1):** Jebero. • **Cariban (4):** Galibi Carib, Maquiritari, Panare, Macushi. • **Central Sudanic (12):** Lendu, Ngiti, Mangbetu, Lugbara, Ma'di, Bongo, Baka (Sudan), Jur Modo, Bagirmi, Kenga, Ngambay, Mbay. • **Chibchan (8):** Ngäbere, Border Kuna, Teribe, Bribri, Arhuaco, Chibcha, Central Tunebo, Pech. • **Chimakuan (1):** Quileute. • **Chocoan (1):** Emberá-Catío. • **Chonan (1):** Tehuelche. • **Chukotko-Kamchatkan (2):** Chukchi, West Itelmen. • **Chumashan (1):** Barbareño. • **Cochimi-Yuman (3):** Ipai, Maricopa, Kiliwa. • **Coosan (1):** Hanis. • **Dagan (1):** Daga. • **Dajuic (1):** Shatt. • **Dizoid (1):** Dizin. • **Dogon (2):** Donno So Dogon, Jamsay Dogon. • **Dravidian (7):** Brahui, Kannada, Malayalam, Tamil, Koya, Kuvi, Telugu. • **East Bird's Head (1):** Meyah. • **Eastern Jebel (1):** Gaam. • **Eskimo-Aleut (5):** Aleut, Eastern Canadian Inuktitut, North Alaskan Inupiatun, Central Alaskan Yupik, Pacific Gulf Yupik. • **Furan (1):** Fur. • **Ta-Ne-Omotic (3):** Bench, Zayse-Zergulla, Wolaytta. • **Gumuz (1):** Northern Gumuz. • **Haida (2):** Haida, Southern Haida. • **Hatam-Mansim (1):** Hatam. • **Heibanic (1):** Moro. • **Hibito-Cholon (1):** Cholón. • **Hmong-Mien (2):** Hmong Njua, Iu Mien. • **Huavean (1):** San Mateo del Mar Huave. • **Ijoid (1):** Izon. • **Inanwatan (1):** Suabo. • **Indo-European (46):** Albanian, Eastern Armenian, Latvian, Russian, Bulgarian, Polish, Welsh, Irish, Swedish, Danish, Icelandic, German, Dutch, Aukan, English, Modern Greek, Bengali, Assamese, Odia, Eastern Panjabi, Marathi, Gujarati, Lambadi, Nepali, Bhojpuri,

Maithili, Domari, Welsh Romani, Hindi, Kashmiri, Shina, Dhivehi, Central Kurdish, Dimli, Ossetian, Central Pashto, Wakhi, Tajik, Western Farsi, Romanian, Italian, French, Catalan, Spanish, Portuguese, Campidanese Sardinian. • **Iroquoian (4):** Cherokee, Mohawk, Oneida, Seneca. • **Japonic (1):** Japanese. • **Kartvelian (1):** Georgian. • **Katla-Tima (1):** Katla. • **Keresan (2):** Eastern Keres, Western Keres. • **Khoe-Kwadi (1):** Nama (Namibia). • **Kiowa-Tanoan (2):** Kiowa, Taos Northern Tiwa. • **Kolopom (2):** Kimaama, Ndom. • **Koman (1):** Komo (Sudan). • **Koreanic (1):** Korean. • **Kresh-Aja (1):** Gbaya (Sudan). • **Kru (1):** Southern Grebo. • **Kuliak (2):** Ik, Soo. • **Kunimaipan (1):** Biangai. • **Lengua-Mascoy (1):** Sanapaná. • **Lower Sepik (1):** Yimas. • **Maban (2):** Masalit, Maba (Chad). • **Mailuan (1):** Mailu. • **Mairasic (1):** Mairasi. • **Mande (8):** Boko (Benin), Dan, Mann, Bambara, Mahou, Western Maninkakan, Vai, Mende (Sierra Leone). • **Mayan (6):** Tz'utujil, Mam, Chol, Tzotzil, Popti', Huastec. • **Misumalpan (2):** Mískito, Mayangna. • **Miwok-Costanoan (1):** Southern Sierra Miwok. • **Mixe-Zoque (3):** Quetzaltepec Mixe, Copainalá Zoque, Chimalapa Zoque. • **Mongolic-Khitan (3):** Dagur, Mongolia Buriat, Halh Mongolian. • **Yam (1):** Ngkontar Ngkolmpu. • **Muskogean (3):** Alabama, Koasati, Choctaw. • **Nakh-Daghestanian (8):** Godoberi, Avar, Hunzib, North-Central Dargwa, Lak, Archi, Lezgian, Ingush. • **Narrow Talodi (1):** Ngile. • **Ndu (1):** Ambulas. • **Nilotic (9):** Bari, Masai, Turkana, Nandi, Pökoot, Dinka, Nuer, Luo (Kenya and Tanzania), Lango (Uganda). • **Nimboranic (1):** Kemtuik. • **Nivkh (1):** Nivkh. • **North Halmahera (3):** Sahu, Tidore, West Makian. • **Bougainville (1):** Rapoisi. • **Nubian (1):** Kenuzi-Dongola. • **Nuclear Torricelli (2):** Urat, Kamasau. • **Nuclear Trans New Guinea (14):** Telefol, Umbu-Ungu, Golin, Kuman, Enga, Huli, Kewa, Nen, Rawa, Selepet, Gadsup, Kobon, Eipomek, Ekari. • **Nyimang (1):** Ama (Sudan). • **Otomanguean (22):** Guerrero Amuzgo, Cuicatec, Pinotepa Nacional Mixtec, Peñoles Mixtec, San Miguel El Grande Mixtec, Copala Triqui, San Juan Atzingo Popoloca, Chiquihuitlán Mazatec, Huautla Mazatec, Western Highland Chatino, Mitla Zapotec, Isthmus Zapotec, Zoogocho Zapotec, Palantla Chinantec, Lealao Chinantec, Comaltepec Chinantec, Chichimeca-Jonaz, Mazahua, Eastern Highland Otomi, Mezquital Otomi, Central Pame, Acatepec Me'phaa. • **Pahoturi (1):** Idi-Taeme. • **Pama-Nyungan (1):** Gumatj. • **Pano-Tacanan (1):** Cavineña. • **Peba-Yagua (1):** Yagua. • **Pomoan (1):** Southeastern Pomo. • **Quechuan (2):** Imbabura Highland Quichua, Huallaga Huánuco Quechua. • **Sahaptian (2):** Nez Perce, Northwest Sahaptin. • **Saharan (3):** Beria, Central Kanuri, Tebu. • **Salishan (7):** Bella Coola, Comox, Halkomelem, Squamish, Shuswap, Kalispel-Pend d'Oreille, Okanagan. • **Sentanic (1):** Sentani. • **Sepik (5):** Kwoma, Awtuw, Yessan-Mayo, Alamblak, Namia. • **Sino-Tibetan (52):** Leh-Kenhat, Tibetan, Tibetan, Sikkimese, Gurung, Eastern Tamang, Chaudangsi, Kinnauri, Tshangla, Kok Borok, Bodo-Mech, Garo, Southern Jinghpaw, Chang Naga, Nocte Naga, Maru, Burmese, Akha, Lahu, Xishanba Lalo, Lisu, Pumi, Dhimal, Lepcha, Chepang, Camling, Athpariya, Limbu, Thulung, Dumi, Eastern Newari, Bwe Karen, Eastern Kayah, S'gaw Karen, Angami Naga, Sumi Naga, Ao Naga, Lotha Naga, Hills Karbi, Bawm Chin, Mizo, Mara Chin, Tedim Chin, Manipuri, East-Central Tangkhul Naga, Mising-Padam-Miri-Minyong, Apatani, Central Bai, Tawra, Rawang, Mandarin Chinese, Yue Chinese. • **Siouan (7):** Mandan, Crow, Hidatsa, Dakota, Lakota, Osage, Biloxi. • **Songhay (2):** Koyraboro Senni Songhai, Koyra Chiini Songhai. • **South Omotic (2):** Aari, Dime. • **South Bougainville (1):** Naasioi. • **Surmic (2):** Majang, Murle. • **Tai-Kadai (3):** Nung (Viet Nam), Thai, Southern Dong. • **Tarascan (1):** Purepecha. • **Tequistlatecan (1):** Lowland Oaxaca Chontal. • **Timor-Alor-Pantar (3):** Abui, Adang, Makasae-Makalero. • **Totonacan (3):** Huehuetla Tepehua, Xicotepec De Juárez Totonac, Yecuatla Totonac. • **Tsimshian (2):** Gitxsan, Southern-Coastal Tsimshian. • **Tungusic (3):** Manchu, Udihe, Evenki. • **Tupian (2):** Paraguayan Guaraní, Tapieté. • **Turkic (9):** Chuvash, Bashkir, Karachay-Balkar, Uzbek, Sakha, Central Oghuz, Turkish, Tuvinian, Turkic Khalaj. • **Uralic (10):** Estonian, Finnish, Hungarian, Vach-Vasjugan, Northern Mansi, Eastern Mari, Erzya, Udmurt, North Saami, Tundra Nenets. • **Uto-Aztecan (16):** Cahuilla, Hopi, Comanche, Mayo, Yaqui, Huasteca Nahuatl, Highland Puebla Nahuatl, Northern Puebla Nahuatl, El Nayar Cora, Huichol, Huarijio, Central Tarahumara, Lowland Tarahumara, Pima Bajo, Tohono O'odham, Northern Tepehuan. • **Wakashan (3):** Kwak'wala, Makah, Nuu-chah-nulth. • **West Bird's Head (1):** Tehit. • **West Bomberai (1):** Iha. • **Wintuan (1):** Wintu. • **Yawa-Saweru (1):** Yawa. • **Yeniseian (1):** Ket. • **Yokutsan (1):** Northern Yokuts. • **Yukaghir (1):** Southern Yukaghir. • **Yuki-Wappo (1):** Wappo. • **Isolates (45):** Abun, Anem, Basque, Berta, Bilua, Burushaski, Camsá, Cayubaba, Chitimacha, Coahuilteco, Cofán, Duna, Guató, Karok, Klamath-Modoc, Kunama, Kunza, Kuot, Kutenai, Laal, Lavukaleve, Leco, Maybrat-Karon, Mosetén-Chimané, Mpur, Nara, Páez, Sandawe, Savosavo, Seri, Siuslaw, Sulka, Takelma, Timucua, Tonkawa, Tunica, Urarina, Vilela, Waorani, Warao, Washo, Yale, Yele, Yuchi, Zuni.

# ПЕТДЕСЕТ И ОСЕМ

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**Резюме.** Числителните, особено некръглите след първата десетка, често се пренебрегват при описанието на езиците. А при това тяхното образуване е област, в която езиците се различават значително и по интересни начини. Съсредоточавайки вниманието си върху числото 58, тук анализираме названията му в генеалогично балансирана извадка от 720 езика, като ги класифицираме по няколко признака и разглеждаме географското разпределение на отделните стойности на тези признаци и корелациите им едни с други и спрямо други граматични параметри. Накрая се спираме и на въпроса за връзката между бройната система и колексифика-цията на 'пръст на ръка/пръст на крак'.

**Ключови думи:** *словоред; словообразуване; типология; универсалии; числителни имена*

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