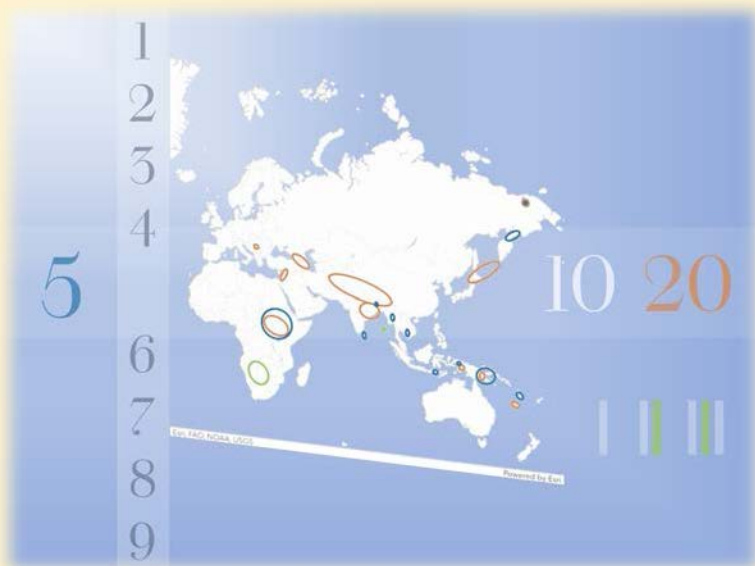


# Linguistic Atlas of Asia and Africa

## III

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CHITSUKO FUKUSHIMA, SATOKO SHIRAI, MIKA FUKAZAWA,  
HIROYUKI SUZUKI, AND MITSUAKI ENDO



Geolinguistic Society of Japan



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## Abbreviations

#	heuristically reconstructed (Nilo-Saharan) root
Akk	Akkadian
CDIAL	<i>A comparative dictionary of Indo-Aryan languages</i> (Turner 1985)
DEDR	<i>A Dravidian etymological dictionary</i> (Burrow & Emeneau 1984)
ES	Eastern Sudanic
IA	Indo-Aryan
LB	Lolo-Burman
PIE	Proto-Indo-European
Pir	Proto-Iranian
PKC	Proto-Kuki-Chin
PLB	Proto-Lolo-Burman
PTB	Proto-Tibeto-Burman
STEDT	<i>The Sino-Tibetan etymological dictionary and thesaurus</i>
TB	Tibeto-Burman
WrT	Written Tibetan



# Chapter XIV

## System of 'sibling' terms



## System of ‘sibling’ terms in Asian and African languages

### 1. System of ‘sibling’ terms

The aim of this project is to show the geographical variation of the system of ‘sibling’ terms in AA languages. The system of ‘sibling’ terms is described using three criteria, that is, distinctions of relative age, sex, and relative sex. A revised classification of the systems was proposed for this project based on Murdock (1968) and Matsumoto (2006). The types of the systems are classified as Table 1.

Table 1: Types of the system of ‘sibling’ terms classified using three criteria.

	group name & symbol	relative age	sex	relative sex
A	Undifferentiated sibling type ○			
B	Relative age type —	+		
C	Skewed age type ▽	+	+	
D	Age/sex type □	++	++	
E	Sex type (Brother/ sister type) ◇		+	
F	Relative sex type ⊕			+
FB	Relative sex/age type /	+		+
FC	Relative sex/ skewed age type ▽	+	+	+
FD	Relative sex/age/ sex type ▱	++	++	+
FE	Relative sex/sex type ◊		+	+

The systems from A to E are explained with the distinctions of relative age and sex.

The systems from F to FE are related with the distinction of relative sex and are often combined with other distinctions. In the maps of each language or language group, the number of terms in the system is added to the group name: e.g. A1, B2, C3, D4, E2. The systems of F series are expected to have lots of variation, so it should be noted that the same individual type may express different systems.

### 2. Geographical variation

In order to overview the geographical variation of the systems in Asia and Africa, the rates (percentage) of individual systems in each language or language group are shown by the following maps. Figure 14.0.1 is a synthesized map which show the total picture of individual types in each language or language group using pie charts. Figures 14.0.2-14.0.7 show the geographical distribution of each type using the size of circles to show the percentage.

The type A (Undifferentiated sibling type or no distinction type) covers around 30 percent in Kalahari Basin Area and Nilo-Saharan and 10 percent or less in Niger-Congo, Austronesian, Turkic, Semitic and South Asia. This type is rather conspicuous in Africa, but is also found in Southeastern Asia.

The type B (Relative age type or Elder sibling / younger sibling type) occupies 50 percent or less in Kalahari Basin Area, Kra-Dai, Austronesian and Austroasiatic and 10 percent or less in Niger-Congo, Nilo-Saharan, Tibeto-Burman, Turkic, Japonic

and South Asia. This type is found nearby the type A.

The type C (Skewed age type or Elder brother / elder sister / younger sibling type) commands an absolute majority in Tungusic and Mongolic and accounts for nearly 50 percent in Uralic, more than 30 percent in Austroasiatic and Kra-Dai, around 20 percent in Turkic and Iranian, and around 10 percent or less in Tibeto-Burman, Austronesian, Niger-Congo, Kalahari Basin Area, Nilo-Saharan, Semitic and Japonic.

According to these distributions, the changes from the type A to the type B and from the type B to the type C should have occurred.

The type D (Age/sex type or Elder brother / elder sister / younger brother / younger sister type) is the only type in Sinitic, and takes up more than two thirds in Japonic, Tibeto-Burman and Dravidian, accounts for nearly 50 percent in Hmong-Mien, and is also found in Turkic, Iranian, Uralic, Ainu, Kra-Dai, Austroasiatic, Kalahari Basin Area, South Asia and Tungusic. The original type in Sinitic must have affected neighboring languages. The type D seems to have split the distributions

of the type C; thus the type D is newer than the type C.

The type E (Sex type or Brother / sister type) holds the vast majority in Semitic and South Asia, more than half in Nilo-Saharan and Iranian, around one third in Uralic and Turkic, less than 20 percent in Dravidian, and only a few percent in Kalahari Basin Area, Niger-Congo and Hmong-Mien. This is truly the European type, so Uralic, Turkic, Niger-Congo and Dravidian must have been affected by influential Indo-European languages.

F to FE types related with the distinction of relative sex are found in Chukotko-Kamchatkan (100%), Korean (100%), Ainu (83%), Ryukyuan (97%), Hmong-Mien (45%), Austronesian (40%), and Niger-Congo (68%). Ryukyuan has been added since it is based on a dataset different from Japonic. Languages or language groups which occupy less than 10% are Dravidian, Austroasiatic, Tibeto-Burman, Japonic, Mongolic, Turkic, South Asia, Nilo-Saharan, and Kra-Dai. Since F to FE types are found in the peripheries of Asia and Africa, the types might be the oldest in the two continents.

(FUKUSHIMA Chitsuko)



SYSTEM OF 'SIBLING' TERMS IN ASIAN AND AFRICAN LANGUAGES

- A Undifferentiated sibling type
- B Relative age type
- C Skewed age type
- D Age/sex type
- E Sex type
- F Relative sex type  
(Includes FB, FC, FD, and FE)

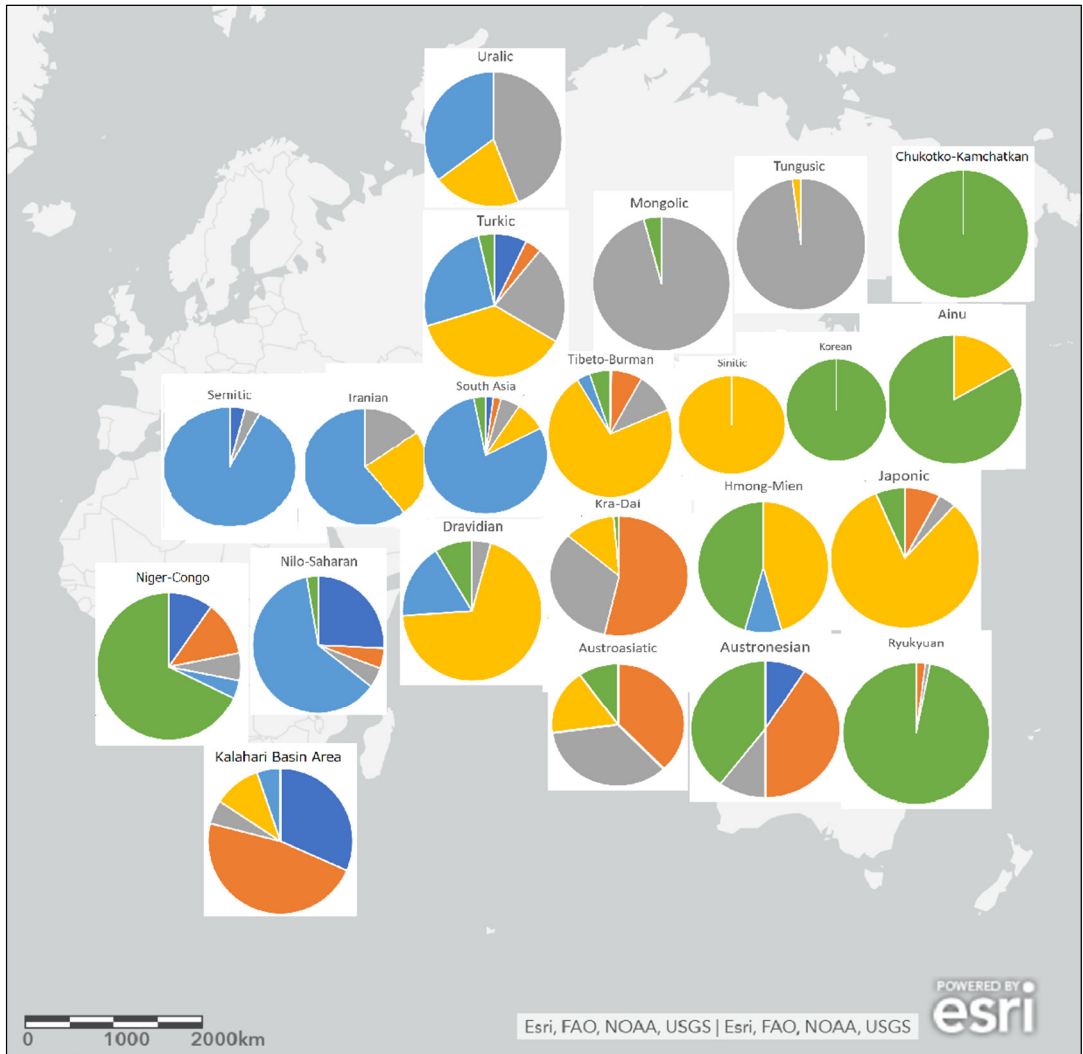


Figure 14.0.1: Rates of systems of 'sibling' terms in each language or language group.

SYSTEM OF 'SIBLING' TERMS IN ASIAN AND AFRICAN LANGUAGES



Figure 14.0.2: Rates of type A of the system of 'sibling' terms.

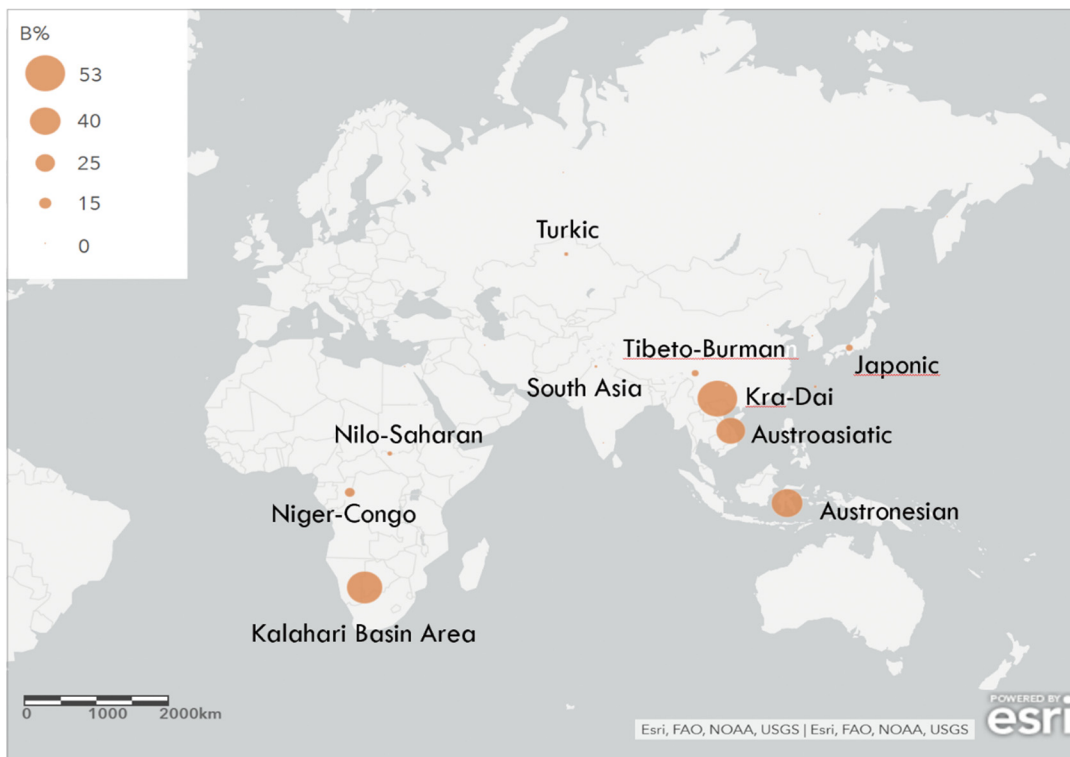


Figure 14.0.3: Rates of type B of the system of 'sibling' terms.

SYSTEM OF 'SIBLING' TERMS IN ASIAN AND AFRICAN LANGUAGES



Figure 14.0.4: Rates of type C of the system of 'sibling' terms.

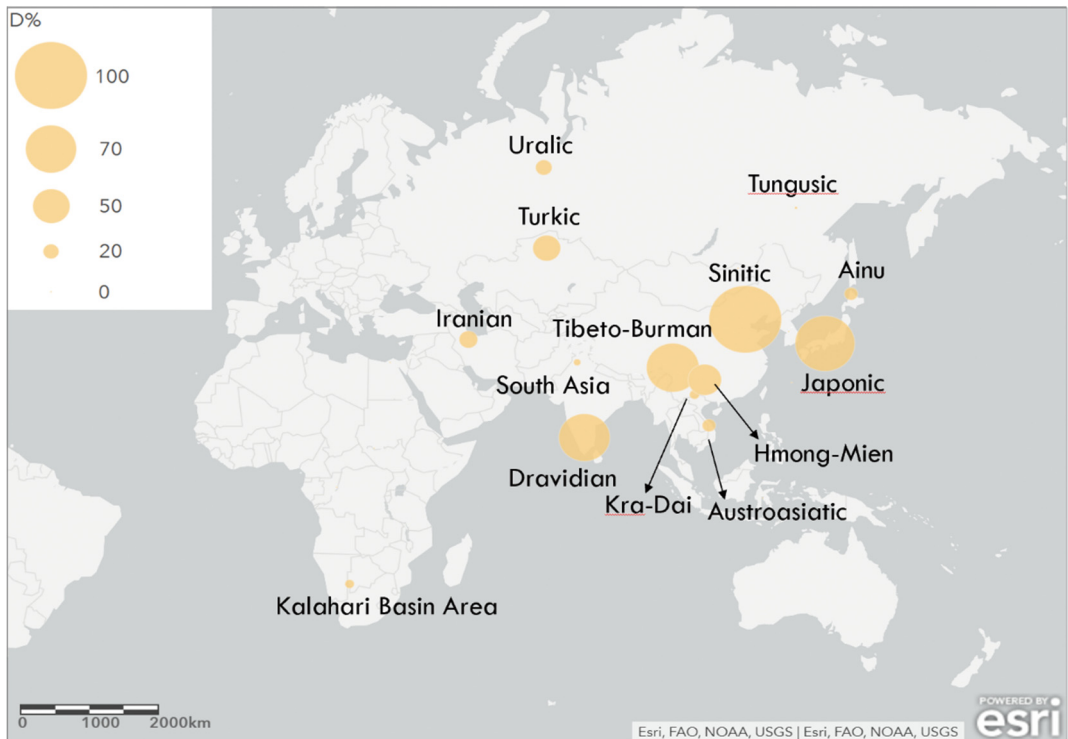


Figure 14.0.5: Rates of type D of the system of 'sibling' terms.

SYSTEM OF 'SIBLING' TERMS IN ASIAN AND AFRICAN LANGUAGES

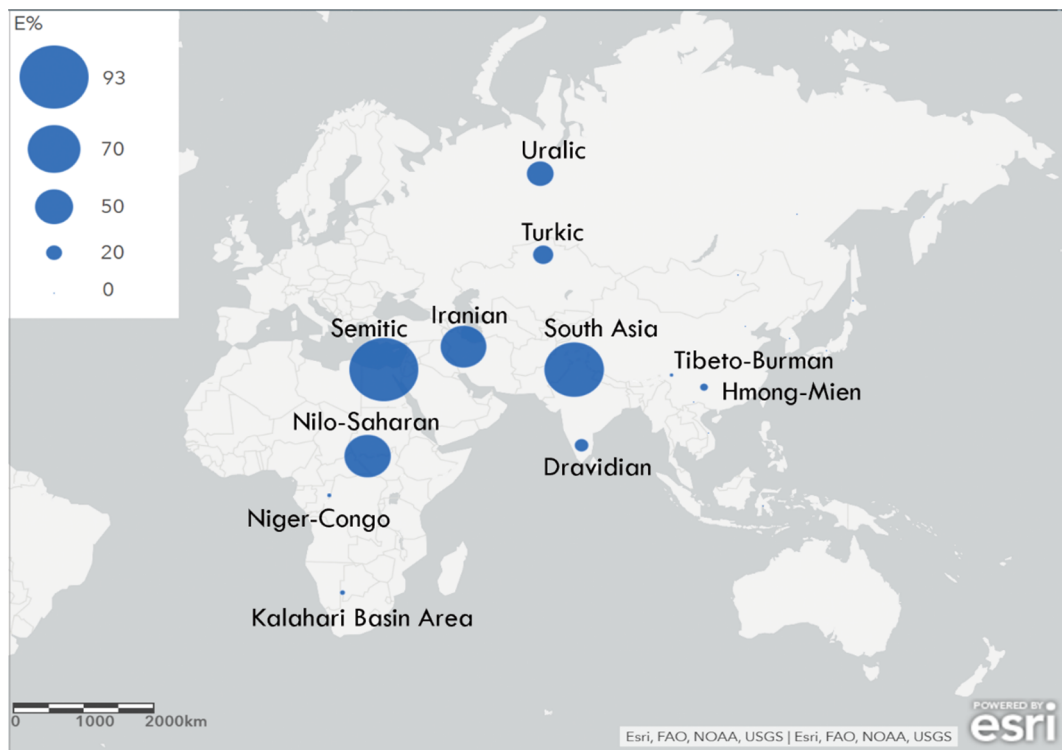


Figure 14.0.6: Rates of type E of the system of 'sibling' terms.

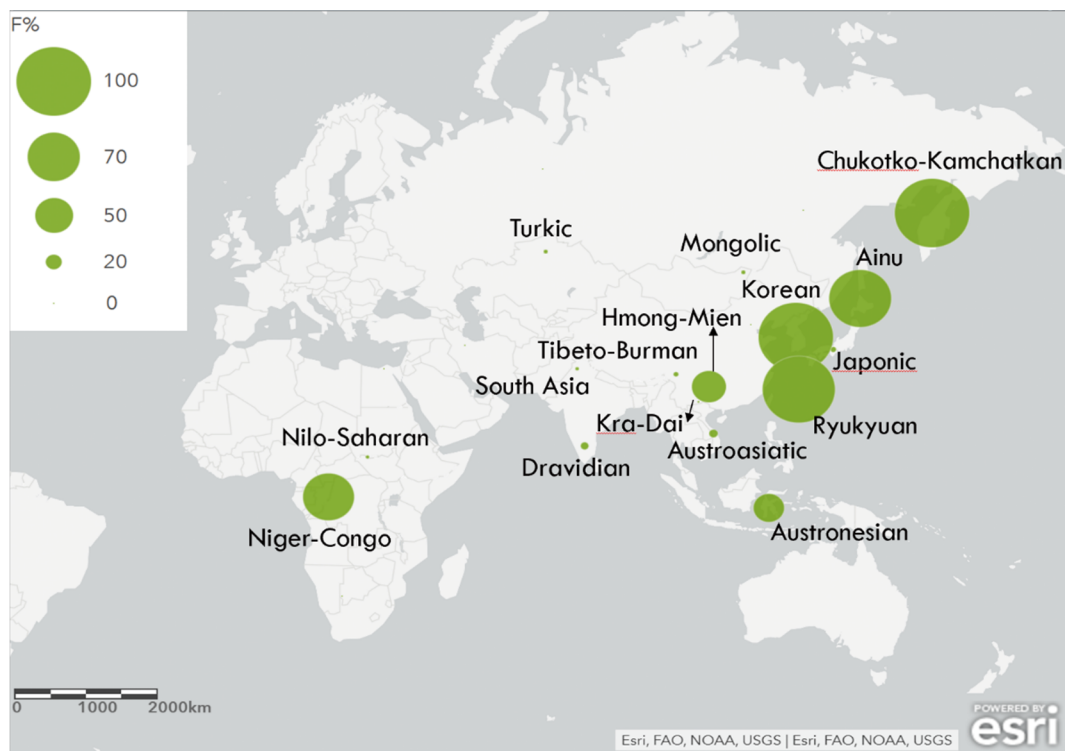


Figure 14.0.7: Rates of type F of the system of 'sibling' terms.

## System of ‘sibling’ terms in Chukotko-Kamchatkan

### 1. Classification

Chukotko-Kamchatkan languages have 3 categories for sibling terms: FB type, FC type and FE type.

FB4a type: Relative sex/sex

brother for women/ sister for men /  
brother for men, sister for women

FB4b type: Relative sex/relative age

brother for women / sister for men /  
brother for men, sister for women /  
younger sibling

FC5 type: Relative sex/sex/relative age

elder brother / younger brother /  
brother / sister / sister for women

FC6 type: Relative sex/sex/relative age

elder brother / younger brother /  
brother / brother for men / sister for  
men / sister for women

FE3 type: Relative sex/sex

brother / sister / brother for men, sister  
for men

Chukchi

FD5: Relative sex/sex/relative age type

<i>ənʔə,</i> <i>əneelʔən</i> elder brother			
<i>ətleni</i> younger brother	<i>jitʔemittumyan</i> brother	<i>tʃakəget</i> sister	<i>tʃakettomyan</i> sister for women

Alutor

FB4a: Relative sex/age

<i>qəlitu,</i> <i>qəliktumyan</i> brother for women	<i>sakki</i> sister for men	<i>qetajalʔən</i> brother for men sister for women
<i>vətyərsəʔən</i> middle sibling		

Koryak

FD6: Relative sex/sex/relative age type

<i>əninelfən</i> elder brother				
<i>ʕətʃifanji</i> younger brother	<i>qajtakal- ʔən</i> brother	<i>jitʃamji- tumyan</i> brother for women	<i>tʃakəyet</i> sister for men	<i>tʃaket- tomyan</i> sister for women

Itelmen (southern dialect)

FB4b: Relative sex/relative age type

<i>qitkinəŋ</i> brother for women	<i>lilixl</i> sister for men	<i>sillatumx</i> sister for women, brother for men
<i>imtx</i> younger sibling		

Itelmen (northern dialect)

FE3: Relative sex/sex type

<i>qetkinəŋ</i> brother	<i>lilixl</i> sister	<i>zlatumx</i> sister for women, brother for men
----------------------------	-------------------------	--

## 2. Geographical distribution and interpretation

See map below.

(ONO Chikako)

SYSTEM OF 'SIBLING' TERMS IN CHUKOTKO-KAMCHATKAN

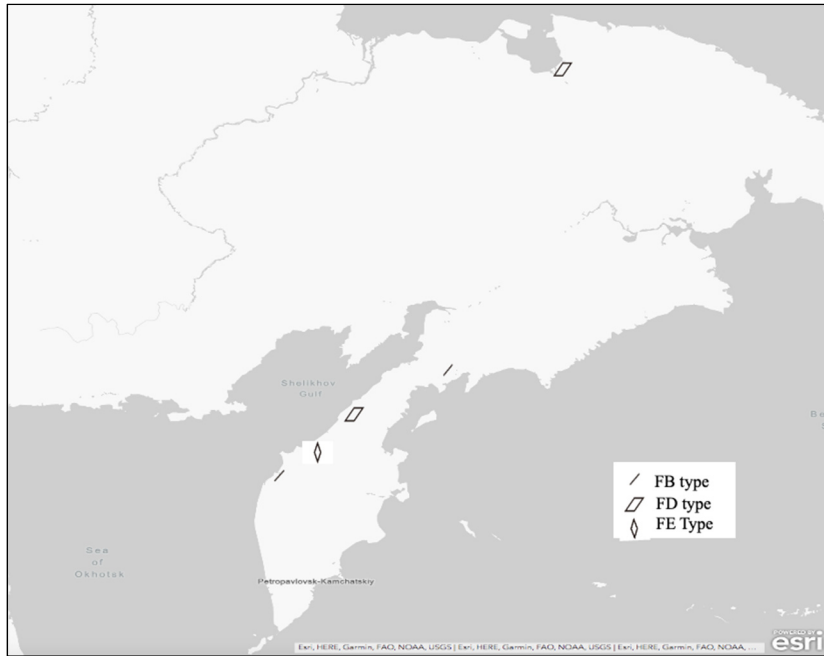


Figure 14.1.1: System of 'sibling' terms in Chukotko-Kamchatkan.

## System of ‘sibling’ terms in Ainu

Hokkaido Ainu is classified as Type FD5, called “relative sex/age/sex type,” because most Ainu dialects define five ‘sibling’ terms by each of all three distinctions, relative age, relative sex, and sex. The terms *yúp(-i)* or *yúpo ~ yúppo* ‘elder brother,’ *sá(-ha)* or *sápo* ‘elder sister,’ and *ák(-i)* or *ákpo* ‘younger brother’ are Type D of “age/sex type,” while ‘younger sister’ has several terms depending on relative sex. When men refer to their own or someone else’s sister, the terms *turés(-i)*, *matápa*, and *macírpe* are used depending on dialects; however, when women refer to them, the term *mátak(-i)* is used.

The Raichishika dialect of Sakhalin falls into “age/sex type,” or Type D4, including *yuhpo(-ho)* ‘elder brother,’ *nanna(-ha)*, ‘elder sister,’ *ahkapo(-ho)* ‘younger brother,’ and *heekopo(-ho)* ‘younger sister.’ The equivalent terms ‘younger sister’ in Hokkaido are also found in the other dialects of Sakhalin, such as *matapa*, *ture(h)si*, and *mataki*, but the details of their usage are unclear. Perhaps some dialects of Sakhalin are in Type FD5 as well.

The system of ‘sibling’ terms in the Kuril dialect is found in Table 1.

Table 1: The system of ‘sibling’ terms in the Kuril dialect

	K	D	T
elder brother	<i>kiupi</i> < <i>ku-yupi</i>	<i>ubu</i>	<i>habo</i>
elder sister	<i>ksa</i> < <i>ku-sa</i>	<i>kiyani</i> <i>aapu</i>	<i>habo</i>
younger brother	<i>kaki</i> < <i>ku-aki</i>	<i>akipu</i>	<i>akibo</i>
younger sister	<i>uarmat</i>	<i>materpiy</i>	<i>ake’bo</i>

(K/ Kurascheninnikov (1738), D/ Dybowski (1892), and T/ Torii (1903). The prefix *ku-* denotes the 1 person singular possessive form.)

The estimated forms of ‘sibling’ terms are classified as Type D4; these are as follows: *yup(-i)* ‘elder brother,’ *sa* or *hapo* ‘elder sister,’ *ak(-i)* or *akipo* ‘younger brother,’ and *uarmat* or *macírpe* ‘younger sister.’ However, based on Torii’s data, it would be possible to view *hapo* ‘elder sibling’ and *akipo* ‘younger sibling’ as “relative age type,” i.e., Type B2. Noteworthy, *hápo* means ‘mother’ in most Hokkaido dialects. In the Nayoro dialect of Hokkaido, *hápo* is often used as ‘elder sister’ in the Kuril dialect, and *sá* is formal.

According to Matsumoto (2006), *turés(-i)* occupied the meaning of ‘younger sister for a male speaker,’ and *ák(-i)* was changed from the meaning of ‘younger sibling’ to the meaning of ‘younger brother.’ This gave rise to the word *mátak* ‘younger sister for a female speaker,’ which consists of *mat* ‘woman’ - *ak* ‘younger brother.’

In some dialects of Hokkaido, the word *turés(-i)* appears in oral literature rather than everyday speech, and it sometimes means ‘wife’ or ‘lover.’ Instead of *turés(-i)* for ‘the sister of a male speaker,’ *matápa*, which consists of *mat* ‘women’ – *apa* ‘relatives,’ is used in the Saru and Horobetsu dialects, and *macírpe*, *mat* ‘women’- *ir* ‘relatives’ – *pe* ‘person,’ is used in the Horobetsu, Hobetsu and Chitose dialects.

(FUKAZAWA Mika)

SYSTEM OF 'SIBLING' TERMS IN AINU

- D4
- ▧ FD5

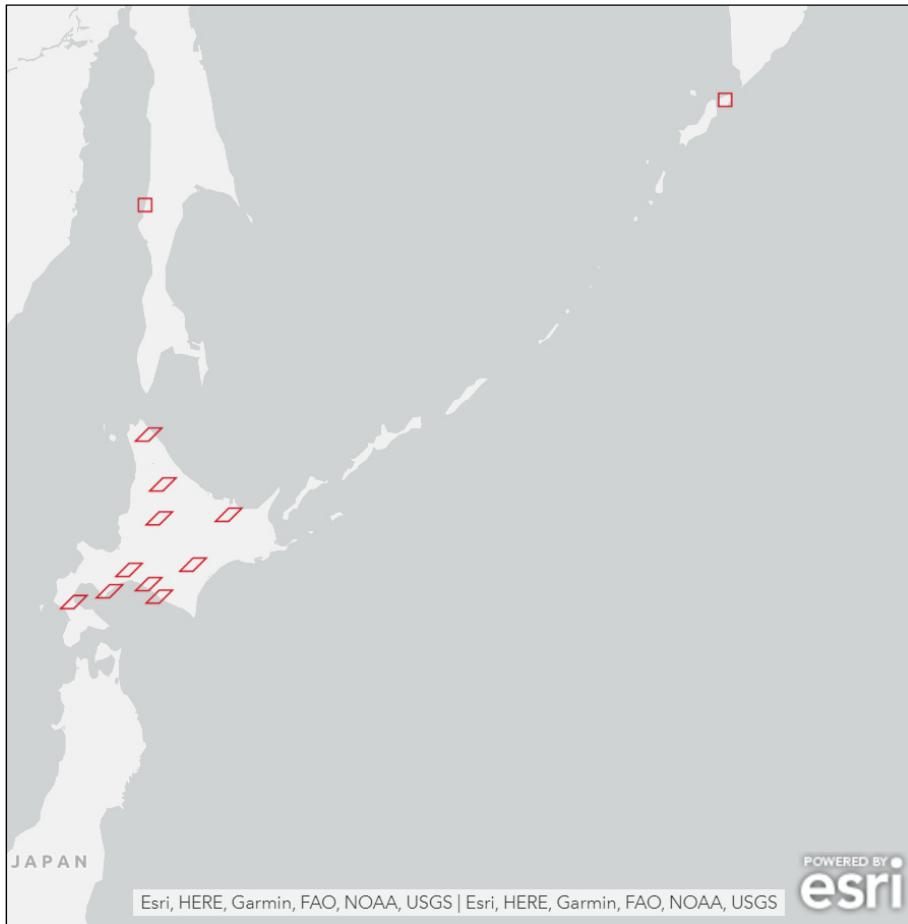


Figure 14.2.1: System of 'sibling' terms in Ainu.



## System of ‘sibling’ terms in Japonic

Fig. 14.3.1. is a linguistic map of Japonic including Ryukyuan, and Figs. 14.3.2 and 14.3.3 are linguistic maps of Ryukyuan. They are based on the different datasets. The former is based on five dictionary items, ‘sibling’, ‘elder brother’, ‘elder sister’, ‘little brother’ and ‘little sister’ in Hirayama (1992-4). The latter is based on five dictionary items, ‘male sibling’, ‘female sibling’, ‘elder brother’, ‘elder sister’ and ‘little sibling’ in Nakamoto (1981).

See Fig. 1.1.1. D4 type (Age-sex type) is widespread in Mainland Japanese. D4 is a four-term system distinguished by relative age and sex, which has terms for ‘elder brother’, ‘elder sister’, ‘little brother’ and ‘little sister’. B2 type (Relative age type) is found in part of western Japan and Hachijo. B2 is a two-term system distinguished by relative age, which has terms for ‘elder sibling’ and ‘little sibling’. This type is attested since the dialect has a general term for ‘sibling’, which consists of terms for ‘little sibling’ and ‘elder sibling’: for example, *otodoi* (*ototo* + *e*) in western Japan and *oto:ne* (*oto* + *ane*) in Hachijo. Thus, B2 is an older system which remains only in a compound word.

C3 type (Skewed age type) is found in Hachijo. C3 is a three-term system distinguished by relative age, with a supplementary distinction of sex for elder siblings alone, which has terms for ‘elder brother’, ‘elder sister’, and ‘little sibling’. This system is attested in Japanese in the eighth century, so again C3 is an older system which remains in the marginal area.

See Fig. 1.1.2. In Ryukyuan, FB and FC types, which are systems related with the

relative sex, are mainly spread: they have terms for ‘female sibling for men’, and ‘male sibling for women’. FC5 which has terms for ‘elder brother’ and ‘elder sister’ prevails but possibly FB4 which has a term for ‘elder sibling’ is parallelly used. (This is not attested by Nakamoto 1981, but we have evidence from other dictionaries.)

### FC5

elder br.	elder sis.	female	male
little sibling		sibling	sibling

### FB4

elder sibling		female	male
little sibling		sibling	sibling

In FC4b and FB3, the term only for one side of relative sex is used, which may be a new change (loss of a term) or only the response from either men or women.

### FC4b

elder br.	elder sis.	female
little sibling		sibling

or

elder br.	elder sis.	male
little sibling		sibling

### FB4

elder sibling		female
little sibling		sibling

or

elder sibling		male
little sibling		sibling

Sometimes the term for ‘elder sibling’ such as *seza* is used for ‘elder brother’, and the term for ‘elder brother’ or ‘elder sister’ is missing, which is FC4a type. This may be regarded as a stage between FB4 and FC5.

FC4a

‘*seza*’ type

<i>seza</i>	elder sis.	female	male
little sibling		sibling	sibling

a type naming only ‘elder sister’

x	elder sis.	female	male
little sibling		sibling	sibling

a type naming only ‘elder brother’

elder br.	x	female	male
little sibling		sibling	sibling

See Fig 1.1.3. The ‘*seza*’ type spreads in Amami and Sakishima, while a type naming only ‘elder sister’ is in Amami and one naming only ‘elder brother’ mainly in Okinawa.

Nakamoto (1992: 164ff) claims that *seza* for ‘elder sibling’ originated from a combination of *se* for ‘elder sister’ and *za*

for ‘elder brother’. See Fig. 1.1.4. The original system does not remain, but there are separate distributions of *ase* for ‘elder sister’ in Amami and *aza* or *se:* for ‘elder brother’ in Sakishima, which might be the remnants of the old system (*a* ‘my’: *ase* ‘my sister’).

While Ryukyuan has relative-age related systems, Mainland Japanese do not have them according to the maps. However, the eighth-century historical documents have examples in which *imo* had a meaning of ‘sister’ and *se* had a meaning of ‘brother’. Matsumoto (2006) regards that the prehistoric Japanese also had a system distinguished by the relative sex.

(FUKUSHIMA Chitsuko)

SYSTEM OF 'SIBLING' TERMS IN JAPONIC

Figure 14.3.1 Japonic

- B2 Relative age type
- ▽ C3 Skewed age type
- D4 Age/sex type
- / FB4 Relative sex/age type
- ⌋ FC4a Relative sex/skewed age type (one side of sex of elder siblings)
- ⌋ FC5 Relative sex/skewed age type

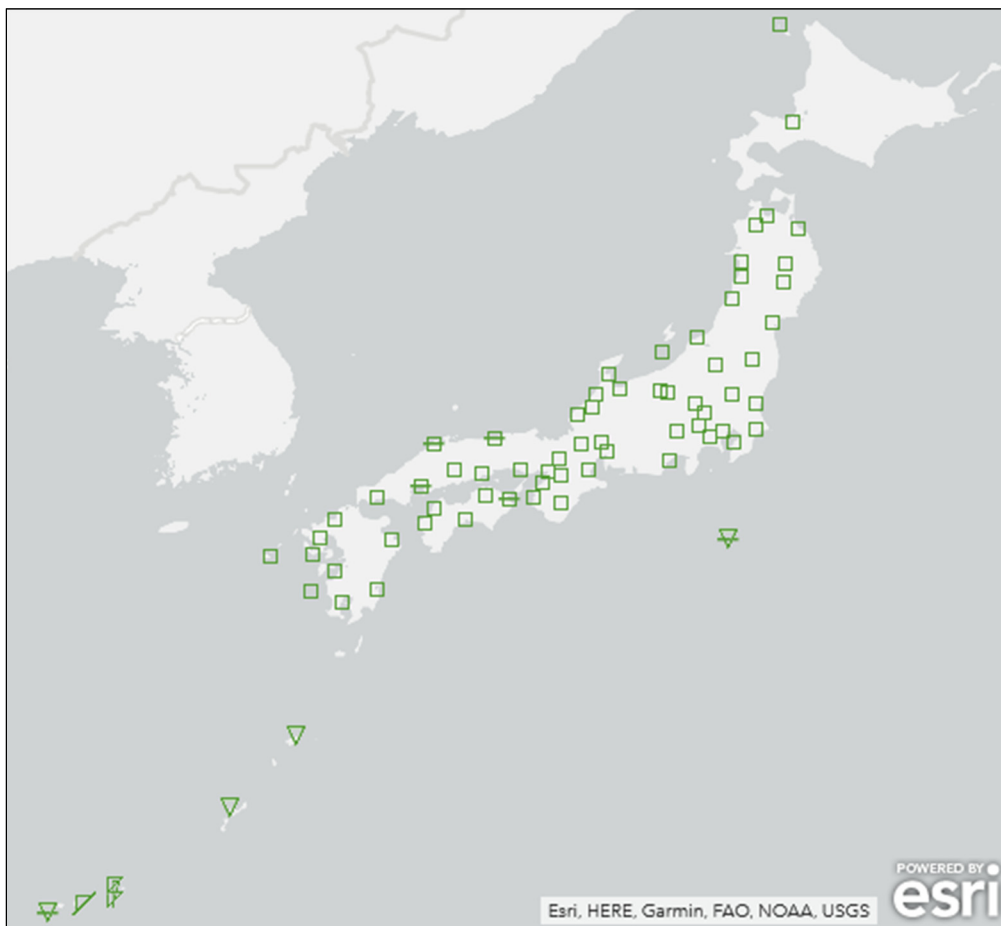


Figure 14.3.1: System of 'sibling' terms in Japonic.  
Source: Hirayama (1992-4)

Figure 14.3.2 Ryukyuan

- B2 Relative age type
- ▽ C3 Skewed age type
- / FB4 Relative sex/age type
- < FB3 Relative sex/age type  
(one side of relative sex)
- ↑ FC4a Relative sex/skewed age type  
(one side of sex of elder siblings)
- ▽ FC5 Relative sex/skewed age type
- ↘ FC4b Relative sex/skewed age type  
(one side of relative age)

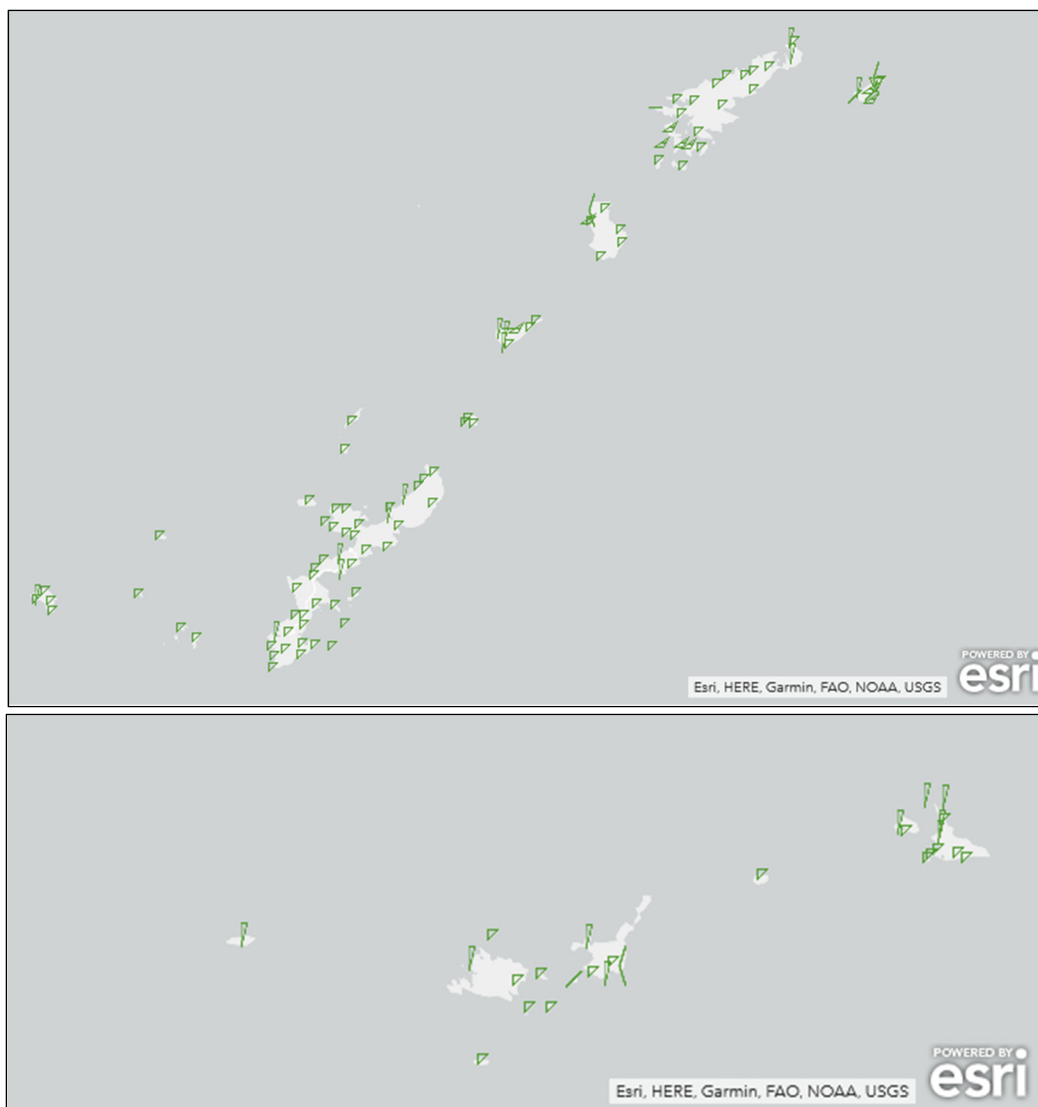


Figure 14.3.2: System of 'Sibling' Terms in Ryukyuan.  
Source: Nakamoto (1981)

Figure 14.3.3 Ryukyuan

- *seza* for elder brother  
A name for elder sister
- ◆ No name for elder brother  
A name for elder sister
- ◇ A name for elder brother  
No name for elder sister

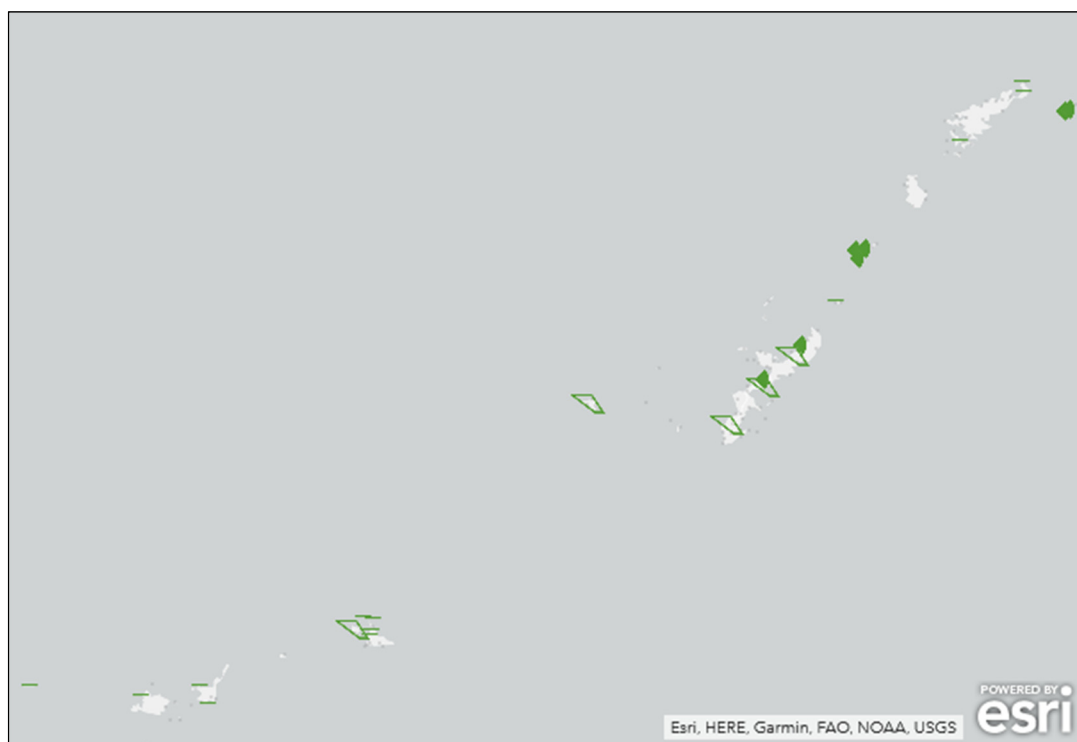


Figure 14.3.3: Some Variation in the FC4a Type in Ryukyuan.  
Source: Nakamoto (1981)

SYSTEM OF 'SIBLING' TERMS IN JAPONIC

Figure 14.3.4 Ryukyuan

■ *aza* for 'elder brother'

△ *se:* for 'elder brother'

■ *ase* for 'elder sister'



Figure 14.1.4: The distributions of *aza* or *se:* for 'elder brother' and *ase* for 'elder sister' in Ryukyuan.  
Source: Nakamoto (1981)

## System of ‘sibling’ terms in Korean

### 1. Classification

The following table shows the system of sibling terms in modern standard Korean (Type FC5).

Relative sex		Male speaker		Female speaker	
Sex		M	F	M	F
Relative age	Elder	hyoŋ	nuna	oppa	onni
	Younger	toŋseŋ			

Some additional remarks:

The sex of younger siblings can be differentiated by adding the suffix ‘nam-’ (男) and ‘yo-’ (女), i.e., ‘namtoŋseŋ’ (younger brother) and ‘yotoŋseŋ’ (younger sister).

This sibling system can be extended to cousins and more distantly related relatives. For example, an elder female cousin can be called ‘onni’ by a female speaker. In order to avoid ambiguity, the word ‘sac<sup>h</sup>un’ (四寸) ‘yukc<sup>h</sup>un’ (六寸), and so on, can be added.

Historically, the system of sibling in Korean has been changed significantly. Matsumoto (2006: 428) proposed what he calls the ‘original’ sibling system in Korean (朝鮮語本来のキョウダイ名) as shown below:

eonni	orabi	nuui
同性・年上キョウダイ	女性から	男性から
au (<azv) (sic.)	見た	見た
同性・年下キョウダイ	男キョウダイ	女キョウダイ

This framework is good for an older stage of this language including the Middle Korean. But there is an anachronism in this table. The word ‘eonni’ (= ‘onni’ in my transcription) is not attested in Middle Korean. And, Many dialects, such as the Cheju dialects, did not know this word except for young speakers influenced by the Seoul dialect.

The word ‘onni’ was probably made from ‘oni’ by an analogy like ‘omma’ < ‘omi’ (mother), and ‘oni’ seems to appear from the late 18<sup>th</sup> century in written documents.

In Middle Korean, the word ‘hyoŋ’ (兄) was used for a male or female elder sibling by the speaker who has the same sex as the referent. Therefore, the correct Middle Korean system of sibling terms can be formulated as follows (Type FB4):

hyoŋ elder sibling, same sex	orabi male sibling,	nuui female
aza younger sibling, same sex	female speaker	sibling, male speaker

The word ‘hyoŋ’ is made by the Sino-Korean morpheme (兄). No native word is known for this item so far. In ‘*Jilin lèishì*’ (鷄林類事) written in the 12<sup>th</sup> century, this word is recorded as ‘兄曰長官’, but the word ‘長官’ has been unintelligible to us.

Among modern dialects, Cheju dialects have a sibling system that is quite similar to that of Middle Korean shown above (partly based on Kim Mijin (2012)).

SYSTEM OF 'SIBLING' TERMS IN KOREAN

səŋ	orapan	nuii
elder sibling, same sex	male sibling,	female
asi	female	sibling,
younger sibling, same sex	speaker	male speaker

The word 'səŋ' is a phonetically modified form of 'hyəŋ', and 'asi' etymologically related to the Middle Korean form 'azΛ'.

**2. Geographical distribution and interpretation**

We have two types FC5 (Seoul) and FB4 (Cheju) in modern dialects. Since the FB4 type is basically the same as that of the Middle Korean, we can say that a change from FB4 > FC5 seems to have occurred in the Seoul dialect.

(FUKUI Rei)

／ FB4

▤ FC5

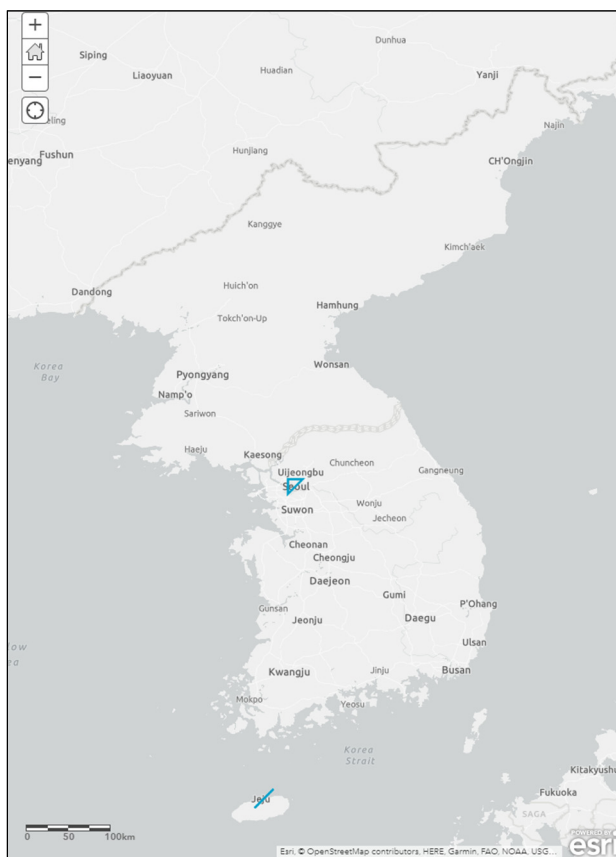


Figure 14.4.1: System of 'sibling' terms in Korean.



## System of ‘sibling’ terms in Sinitic

In this map, data of 612 Chinese dialects are collected. Only type D4 appeared in these data. Some examples are shown in Table 1.

Table1: Examples of Siblings in Sinitic

place	elder brother	younger brother	elder sister	younger sister
1.南京	哥哥	弟弟	姐姐	妹妹
2.莆田	阿兄	阿弟	阿姊	阿妹
3.吴城	兄	老弟	姐	妹
4.资源延东	大大	弟弟	姐姐	妹妹
5.广州	大佬	细佬	大姊	细妹
6.赣县	老伯	老弟	大姊	老妹
7.平定	哥	兄弟	姐	姊妹
8.四都	阿哥	老弟	阿大	老妹
9.大余	哥哥	弟佬	姊佬	妹佬
10.常宁	上佬	佬佬 [lɔlɔ]	姐姐	阿妹

Forms of 1. Nanjing 南京 are the typical standard type(陈 et al. 1996), and this type spread over the northern area. 2. Putian 莆田 uses “xiong兄” for elder brother and “zi姊” for elder sister(李 et al. 2019), and these forms are older than “ge哥” and “jie姐” which are used in the standard type. “a阿” is a frequently used prefix. As in 3. Wucheng 吴城, sibling terms in Sinitic are often used in mono syllabic form, “da大” is often used for denoting elder brother or elder sister (肖 et al. 2017). In many cases “da大” is used as modifier like in 8. Guangzhou 广州 or 6. Ganxian 赣县, however is also used as stem like in 4. Ziyuan Yandong 资源延东 (邓 2005) or 8. Sidu 四都 (刘 2007). “bo伯(father’s elder brother in the standard form)” is mainly used in Jiangxi 江西 area, like 6. Ganxian 赣县 (李 et al. 1992). In the southern area,

“lao佬 (or lang郎)” is frequently used as stem for denoting elder and younger brother or elder and younger sister respectively (5. Guangzhou 广州 (詹 et al. 1988), 9. Dayu 大余 (李 et al. 1992), 10. Changning 常宁 (吴 1998)).

Sibling terms for old Chinese already had distinctions of both relative age and sex, however earlier literature might not have these distinctions. In the Chinese dialects, common stems are sometimes used for denoting different sibling terms. “da大” in forms like “大”, “大大” or “阿大” are sometimes used for stems of both elder brother and elder sister. “lao佬 (lang郎)” can be used for all of the sibling terms. In many cases it is accompanied by a modifier, so solo forms like in 10. Changning 常宁 are quite rare (吴 1998). “lao佬 (lang郎)” is also rarely used for denoting “brothers” or “brothers and sisters”. 崽□[tsu35lɔ35] denoting for “brothers” and □崽女 [lɔ35tsu35nyu13] denoting for “brothers and sisters” in Jiangyong 江永 (黄 1993) may be the case.

In many of northern dialects, “xiongdi 兄弟” can denote “younger brother” and “brothers”, e.g. in 7. Pingding 平定. In many cases they are identified by tone. Furthermore, in some northern dialects solo forms of “兄” are also used for denoting “brothers”. “zimei 姊妹” can be used for denoting “sisters” and “younger sister” as in 7. 平定 Pingding, however the distribution area is smaller than “兄弟” for “younger brother” (延 et al. 2014). It is also notable that “姊妹” is used for denoting “brothers and sisters” in many dialects.

(YAGI Kenji)

SYSTEM OF 'SIBLING' TERMS IN SINITIC

D4      Age/sex type      □

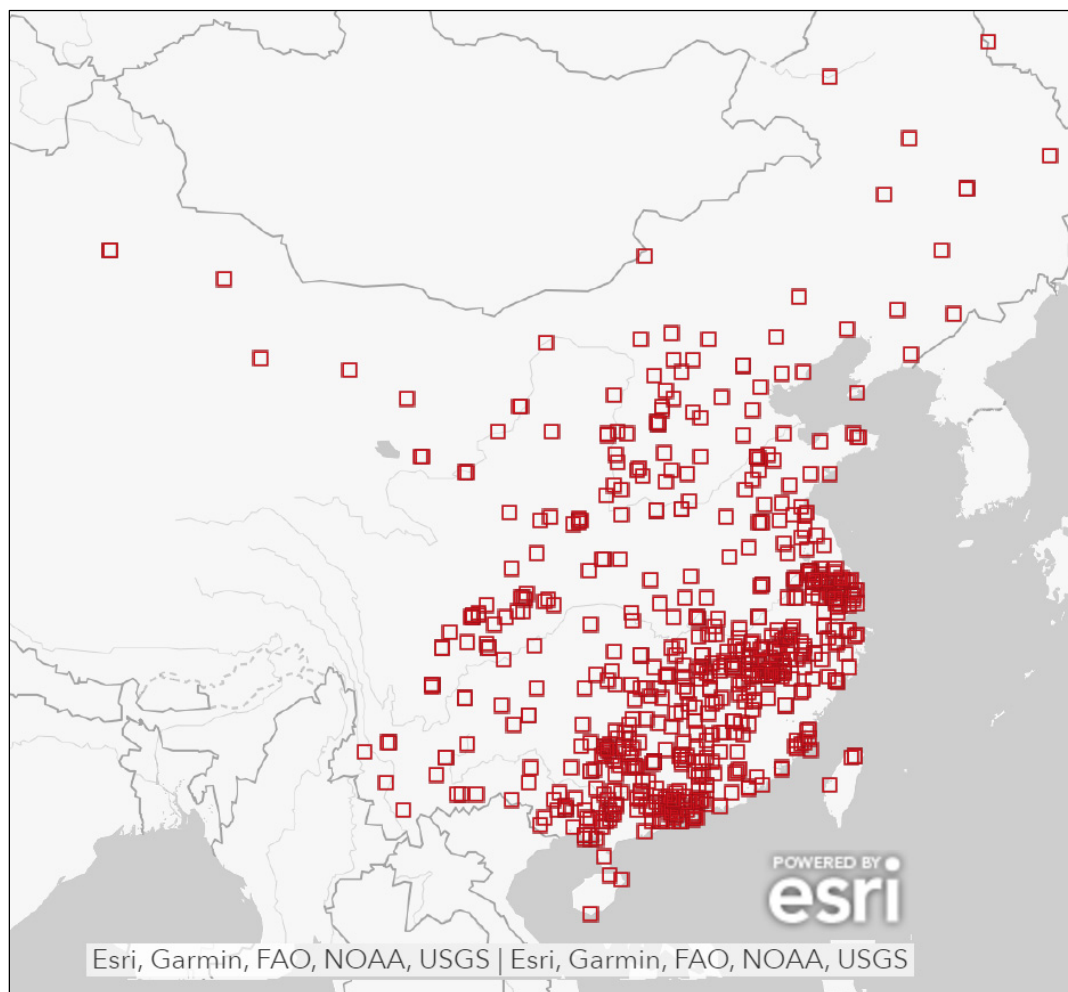


Figure 14.5.1: System of 'sibling' terms in Sinitic.

## System of ‘sibling’ terms in Hmong-Mien

### 1. Classification

In this article, we examine the geographical distribution of kinship terms used for ‘sibling’ in Hmong-Mien. The number of lects included in this study is limited as most vocabularies do not provide the necessary information. Based on available data, sibling terms in Hmong-Mien are classified into four types—Types D, E, FC, and FD—based on the distinctions of relative age, sex, and relative sex. The following details outline each type. The number after each type indicates the number of terms in the system, while the lowercase alphabet after the number indicates the corresponding subtypes within each type.

#### 1. Type D: Relative age/sex type

D4 ‘elder brother’ / ‘elder sister’ / ‘little brother’ / ‘little sister’

#### 2. Type E: Sex type

E2 ‘brother’ / ‘sister’

#### 3. Type FC: Relative sex/skewed age type

FC4 ‘elder brother (for men) or brother (for women)’ / ‘elder sister (for women) or sister (for men)’ / ‘little brother (for men)’ / ‘little sister (for women)’

FC6 ‘brother (for women)’ / ‘sister (for men)’ / ‘elder brother (for men)’ / ‘elder sister (for women)’ / ‘little brother (for men)’ / ‘little sister (for women)’

#### 4. Type FD: Relative sex/age/sex type

FD5a ‘elder brother’ / ‘little brother (for men)’ / ‘little brother (for women)’ / ‘elder sister’ / ‘little sister’

FD5b ‘elder brother (for men)’ / ‘little brother (for women)’ / ‘brother (for women)’ / ‘elder sister’ / ‘little sister’

FD6 ‘elder brother’ / ‘little brother (for men)’ / ‘little brother (for women)’ / ‘elder sister’ / ‘little sister (for men)’ / ‘little sister (for women)’

FD8 ‘elder brother (for men)’ / ‘elder brother (for women)’ / ‘elder sister (for men)’ / ‘elder sister (for women)’ / ‘little brother (for men)’ / ‘little brother (for women)’ / ‘little sister (for men)’ / ‘little sister (for women)’

Note: FC6 and FD8 in the above list are observed in a single lect, Anshun, which belongs to West Hmongic. In this lect, women use FD8 before marriage and FC6 after marriage. On the map, this lect is indicated as FC6/FD8.

### 2. Geographical distribution and interpretation

Based on the available data, types that incorporate relative sex as one of the criteria are primarily distributed in the western part of the entire distribution area. In the eastern part of the area, Type D is widely distributed regardless of the phylogenetic status of the lects. The presence of Type D in Sinitic suggests possible language contact, while the complex types including Type FC and FD may be innovations occurring in the western part of the area. More information is necessary to resolve this issue.

(TAGUCHI Yoshihisa and TANG Baiyan)

SYSTEM OF 'SIBLING' TERMS IN HMONG-MIEN

- |   |          |   |              |
|---|----------|---|--------------|
| □ | Type D4  | ▤ | Type FD5     |
| ◇ | Type E2  | ▥ | Type FD6     |
| ▴ | Type FC4 | ▦ | Type FC6/FD8 |



Figure 14.6.1: System of 'sibling' terms in Hmong-Mien.

## System of ‘sibling’ terms in Kra-Dai

System of ‘sibling’ terms in Kra-Dai are classified into 4 large categories: type B, C, D, and FD. Type B is widespread among Tai languages. Most languages of this type have ‘elder sibling’ and ‘younger sibling’ which are cognate with \*bi<sup>B2</sup> and \*nɔŋ<sup>C2</sup>, respectively (both terms are Proto-Tai forms reconstructed by Li 1977).

Type C has 2 subcategories: C3a and C3b. Type C3a distributes mainly in Northern Tai (especially in northern Zhuang dialects) and Central Tai languages, and Li languages on Hainan Island. Languages of this type distinguish sex only in elder siblings. On the other hand, Type C3b distinguishes sex only for younger siblings. In our dataset, only the Laji language in northwestern Vietnam belongs to this subtype. Matsumoto (2006) indicates that few languages have a system of sibling terms that lack distinction of sex in elder siblings (p. 400). More information on the sibling term system in the Laji language is needed to examine the type of this Laji variation.

Type D is very popular in Kra branch languages such as Gelao and Buyang. Some Northern Tai languages also belong to this type.

Although the number is small, some languages belong to Type FD. The Laji language in the border area between China and Vietnam has two forms ‘younger brother’, one is for men and the other is for women. The Cun language distinguishes relative sex in both ‘younger brother’ and ‘younger sister’.

As for the distribution in Tai languages, some Central Tai languages belong to more than one type. Thus, the distribution is more complex than in Northern and Southwestern Tai languages. We can hypothesize that Tai languages have spread their area after the system of ‘sibling’ terms was simplified.

(HIRANO Ayaka, ENDO Mitsuaki, and  
TOMITA Aika)

- B2 Relative age type  
‘elder sibling’ / ‘younger sibling’
- ▽ C3a Skewed age type I  
‘elder brother’ / ‘elder sister’ / ‘younger sibling’
- ▼ C3b Skewed age type II  
‘elder sibling’ / ‘younger brother’ / ‘younger sister’
- D4 Age/sex type  
‘elder brother’ / ‘elder sister’ / ‘younger brother’ / ‘younger sister’
- ◇ FD5 Relative sex/age/sex type I  
‘elder brother’ / ‘elder sister’ / ‘younger brother’ / ‘younger sister (for men)’ /  
‘younger sister (for women)’
- ◇ FD6 Relative sex/age/sex type II  
‘elder brother’ / ‘elder sister’ / ‘younger brother (for men)’ / ‘younger brother  
(for women)’ / ‘younger sister (for men)’ / ‘younger sister (for women)’

SYSTEM OF 'SIBLING' TERMS IN KRA-DAI

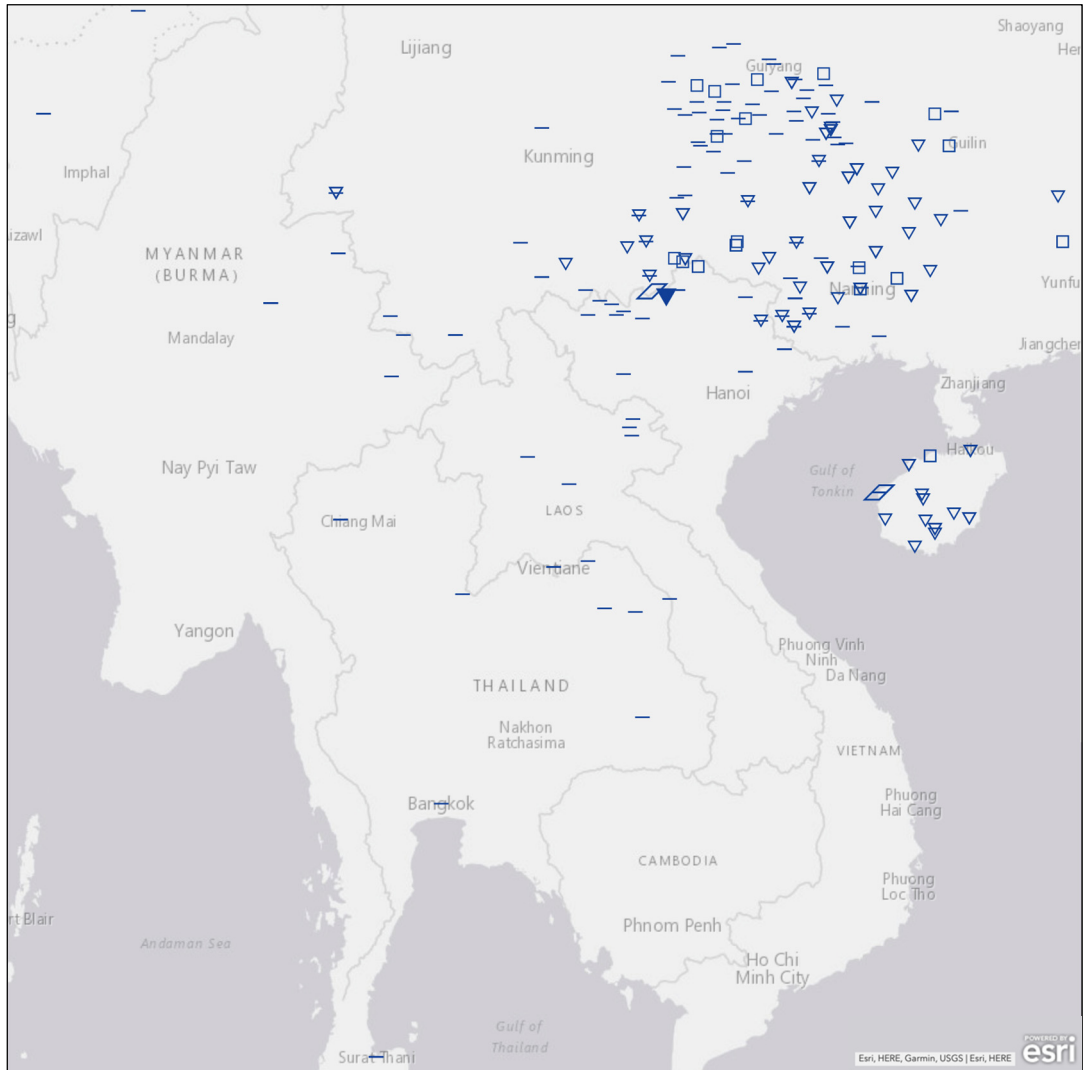


Figure 14.7.1: System of 'sibling' terms in Kra-Dai.

SYSTEM OF 'SIBLING' TERMS IN KRA-DAI

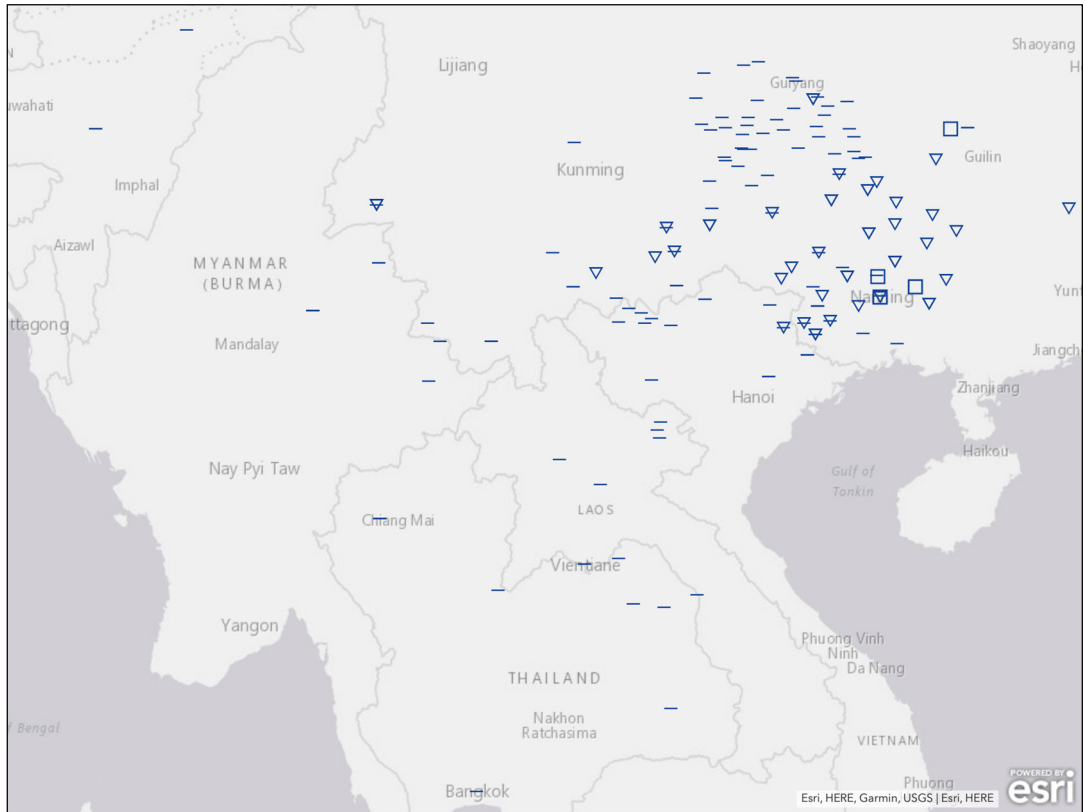


Figure 14.7.2: System of 'sibling' terms in Tai languages.

## System of ‘sibling’ terms in Tibeto-Burman

Tibeto-Burman (TB) languages exhibit a wide variety of typological patterns. The types found in our data follow:

1. Type A: Undifferentiated sibling type  
A1 ‘SI’
2. Type B: Relative age type  
B2 ‘eSI’ / ‘ySI’
3. Type C: Skewed age type  
C3a ‘eB’ / ‘eZ’ / ‘ySI’  
C3b ‘eSI’ / ‘yB’ / ‘yZ’
4. Type D: Age/sex type  
D4 ‘eB’ / ‘eZ’ / ‘yB’ / ‘yZ’
5. Type E: Sex type  
E2 ‘B’ / ‘Z’
6. Type FB: Relative sex/age type  
FB3 ‘eB (m.s.) or eZ (f.s.)’ /  
‘yB (m.s.) or yZ (f.s.)’ /  
‘SI (different gender)’
7. Type FD: Relative sex/age/sex type  
FD5a ‘eB’ / ‘eZ’ / ‘yB’ /  
‘yZ (m.s.)’ / ‘yZ (f.s.)’  
FD5b ‘eB’ / ‘eZ’ / ‘yZ’  
‘yB (m.s.)’ / ‘yB (f.s.)’  
FD6 ‘eB’ / ‘eZ’ /  
‘yB (m.s.)’ / ‘yZ (m.s.)’ /  
‘yB (f.s.)’ / ‘yZ (f.s.)’
8. Type FE: Relative sex/sex type  
FE4 ‘B (m.s.)’ / ‘Z (m.s.)’ /  
‘B (f.s.)’ / ‘Z (f.s.)’

Type A1 is the undifferentiated sibling type with no distinctions among siblings. This type is rarely used, but not entirely absent. It is found only in two languages in our data: Rawang and Wadamkong, both of which are closely related Nungic languages. Examples include Rawang *nvm* ‘sibling, brother or sister’.

- (1) Rawang (LaPolla and Sangdong 2015)

nvm
-----

Type B2 is the relative age type with a single distinction in relative age. This type is found in 46 languages, 26 of which are Karenic mainly spoken in Southeastern Burma.

- (2) Pwo Karen (based on Kato 2004)

wē
phū

This type is also sporadically distributed in Qiangic, Lolo-Burmese-Naxi, and Kuki-Chin-Naga, spoken east and west of TB.

- (3) Mongsen Ao (based on Coupe 2007)

[tə]-tī
[tə]-nu

Type C3 is the skewed age type defined by the distinction of relative age with a supplementary sex distinction only for elder or younger siblings. This type is relatively common, found in 60 languages. Among them, 49 show the distinction only in the elder siblings (i.e., ‘eB’ / ‘eZ’ / ‘ySI’). It is found in a wide range of groups including Lolo-Burmese-Naxi, Qiangic, Sal, Kuki-Chin-Naga, Tani, Kiranti, Tibeto-Kanauri, and Newaric.

- (4) Jinghpaw (Kurabe fieldnotes)

gəphù	gəna
gənaw	



A total of 11 examples of Type C3 show distinction only in younger siblings (i.e., 'eSI' / 'yB' / 'yZ'). Although typologically unusual, it is found in "Naga" and related languages of northeastern India, such as Angami-Ao, Tangkhulic, and Zemeic. It is also sporadically found in Qiangic, Tibeto-Kanauri, and Lolo-Burmese-Naxi.

(5) Tangkhul (based on Marrison 1967)

achei	
gato	achino

Type D4 is the age/sex type with distinctions in both relative age and sex. This type is quite common. In our data, 215 languages belonging to diverse branches show this pattern.

(6) Tangam (based on Post 2017)

aate	aapon
baʔpo	bemme

Type E2 is the sex type with a single distinction in sex. This type is not very common with 20 languages in our data. It is distributed in Qiangic, Tibeto-Kanauri, Sal, and Deng.

(7) Khyungkyog Tibetan (based on Suzuki fieldnotes)

εa ɲe	ʂε fiu
-------	--------

Type FB3 is the relative sex/age type with distinctions in age and relative sex. This type is quite rare, found in only two examples in our data: Northern Yi and Xinyingpan Central Prinmi.

(8) Prinmi (based on Ding 2014)

pɕj <sup>R</sup>	mɯ <sup>L</sup> ŋɯɕ <sup>H</sup>
kɯɕ <sup>F</sup>	

Male speaking

mɯ <sup>L</sup> ŋɯɕ <sup>H</sup>	pɕj <sup>R</sup>
	kɯɕ <sup>F</sup>

Female speaking

Type FD is the relative sex/age/sex type with distinctions in sex, age, and relative sex. This type is found in 22 languages. It can be divided into FD5 and FD6 based on the number of splits. Logically it would represent up to eight splits, but no such complicated examples are found in our data. Dzongkha exhibits five splits:

(9) Dzongkha (based on Imaeda 1990)

phogem	'azhim
nocu	sim

Male speaking

phogem	'azhim
nocu	num

Female speaking

FD5 also includes Myeik Burmese, which shows slightly different splits. In Dzongkha 'yZ' but not 'yB' is distinguished while in Myeik 'yB' but not 'yZ' is distinguished.

(10) Myeik Burmese (based on Kato and Khin Pale 2012)

ʔākò	ʔamǎ
ɲi	ɲimǎ

Male speaking

ʔākò	ʔamǎ
mǎu	ɲimǎ

Female speaking

FD6 shows six splits, as illustrated by:

(11) Rgyaye Tibetan (Ebihara 2010)

awo	ate <sup>he</sup>
nu	ʃaŋmo

Male speaking

awo	ate <sup>he</sup>
nyoŋwo	nəmo

Female speaking

Type FE4 is the relative sex/sex type with distinctions in sex and relative sex. It is found in six Qiangic languages: Mätro nDrapa, Youlaxi Choyu, Japhug, and Wobzi and Siyewu Khroskyabs. This type is also found in Tangut (Jacques 2012).

(12) Mätro nDrapa (Shirai fieldnotes)

veŋapha <sup>1</sup>	neivΛ <sup>1</sup>
----------------------	--------------------

Male speaking

mu <sup>2</sup>	ŋΛŋapha <sup>1</sup>
-----------------	----------------------

Female speaking

Some languages have two different types coexisting. In such cases, we treat them as having both. Wobzi Khroskyabs has both the relative age and relative sex/sex types.

(13) Wobzi Khroskyabs (Yunfan Lai, p.c.)

âda
æteí

(14) Wobzi Khroskyabs (Yunfan Lai, p.c.)

rmâstəy	snóm
---------	------

Male speaking

mô	sq <sup>h</sup> æeí
----	---------------------

Female speaking

TB languages, as illustrated above, exhibit a variety of typological patterns. The undifferentiated sibling, relative sex/age, and relative sex/sex types are quite marginal. Therefore, they should not be the older system. By contrast, the age/sex, skewed age, relative age, and relative sex/age/sex, and sex types exhibit a more or less widespread distribution. Although quite common, the age/sex type would be a Chinese influence, especially in languages spoken in the Sinosphere. The relative age type would not be older since it is chiefly concentrated in Karenic, which may be a Tai influence. The sex type would be an Indic influence, especially in languages distributed in and around the Indosphere. Matsumoto (2000) suggests that the types including relative sex are older in TB since they are distributed sporadically, which suggests that they are remnants of an older system. Another possibility arising from our survey is that the skewed age type represents an older layer because it is found in diverse TB branches and its distribution is not biased toward any region. The relative sex/sex type would be an older type in Qiangic because it is found in Tangut. Further work is required to reveal what the contemporary distribution suggests about the diachronic development of each type.

(KURABE Keita, EBIHARA Shiho, IWASA Kazue, SHIRAI Satoko, SUZUKI Hiroyuki)

**Abbreviations**

B 'brother', e 'elder', f.s. 'female speaking', m.s. 'male speaking', SI 'sibling', y 'younger', Z 'sister'

## SYSTEM OF 'SIBLING' TERMS IN TIBETO-BURMAN

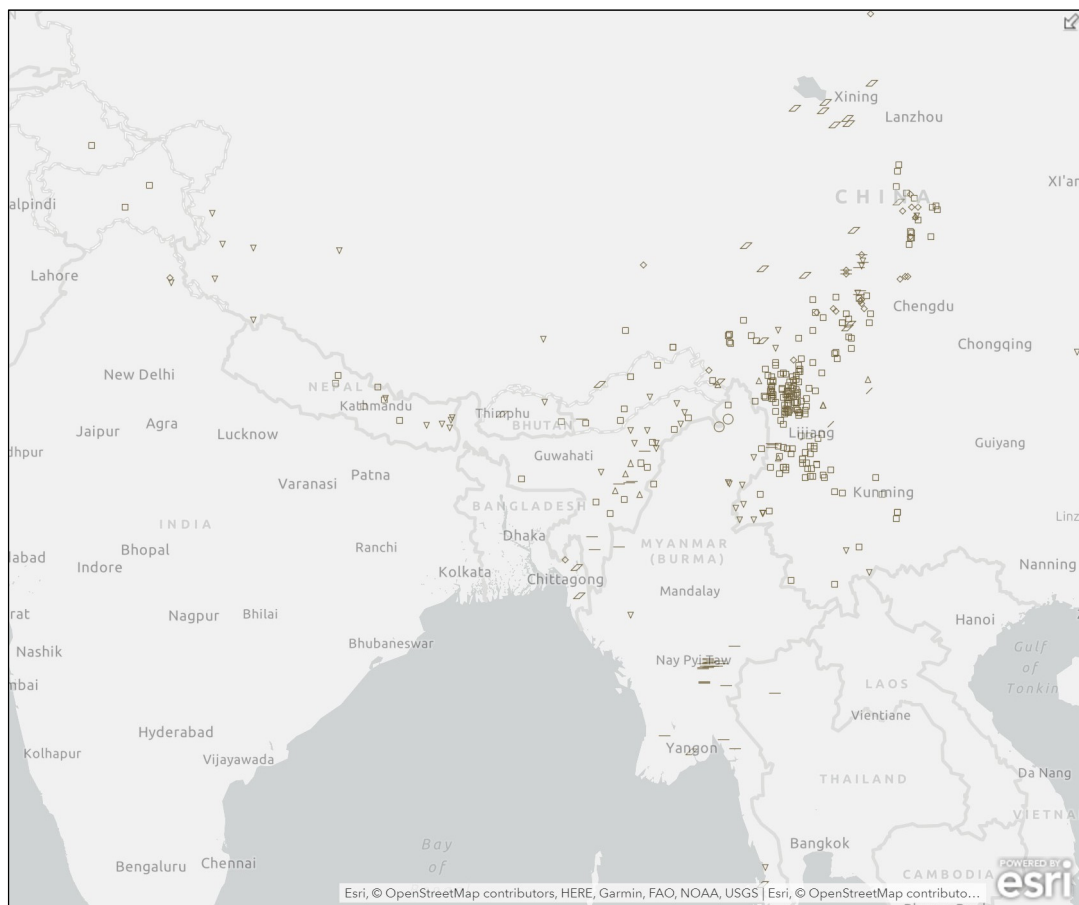


Figure 14.8.1: System of 'sibling' terms in Tibeto-Burman.

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>○ A1 Undifferentiated sibling type</li> <li>— B2 Relative age type</li> <li>▽ C3a Skewed age type</li> <li>△ C3b Skewed age type</li> <li>□ D4 Age/sex type</li> </ul> | <ul style="list-style-type: none"> <li>◇ E2 Sex type</li> <li>/ FB3 Relative sex/age type</li> <li>▧ FD Relative sex/age/sex type</li> <li>◊ FE4 Relative sex/sex type</li> </ul> |
|---|---|

## System of ‘sibling’ terms in Austroasiatic

In Austroasiatic, the system of sibling terms is classified into 8 categories: A, B, C, D, F, FB, FC and FD. Although Matsumoto (2006: 442) counts one Type A in Austroasiatic, we did not find any in our data.

### **Type B:** Relative age type

*Aslian:* Jahai, Kensiu, Semai

*Bahnaric:* Cua, Laven, Sre, Stieng, Tampuan

*Khmeric:* Khmer, Surin Khmer

*Pearic:* Chong, Pear

*Munda:* Mahali [Pachondor],

Mundari [Ambajhariya, Begunbari],

Santali [Kadma, Simoldohi]

### **Type C:** Skewed age type

*Bahnaric:* Bahnar, Jeh, Sapuan

*Katuic:* Katu, Bru, Ta’Oi

*Khmuic:* Khsing-Mul, Mlabri

*Mangic:* Mang

*Monic:* Nyah Kur

*Palaungic:* Lawa, Wa

*Vietic:* Chút, Muong, Tho, Vietnamese

*Munda:* Birhor, Ho [Ghoraduba],

Juang, Kol, Korku, Santali [Tikahara]

### **Type D:** Age/sex type

*Munda:* Asri, Bodo-Gababa, Ho, Koda,

Korwa, Mahali, Mundari, Santali

### **Type F2:** Relative sex type

*Nicobaric* Nancowry

### **Type FB:** Relative sex/age type

Type FB3: *Monic* Mon

Type FB4a: *Aslian* Temiar

Type FB4b: *Nicobaric* Car, *Katu*,

*Khmu*

### **Type FC:** Relative sex/Skewed age type

Type FC4: *Palaungic* Lamet

Type FC5: *Katuic* Pacoh

### **Type FD:** Relative sex/age/sex type

Type FD6: *Munda* Gta’

Type FD8: *Munda* Bondo

Type B and Type C are the most widespread types in Austroasiatic and are mainly distributed in Southeast Asia and the Malay Peninsula. Some cases of Type FB are found in the peripheral area of these regions.

Matsumoto (2006: 422-3) argued that the system of Santali (Munda) is shifting from the original FC4 to D4 and also pointed out that previous observations of certain Munda languages that possess the D4 type pay very little attention to relative sex. In our data, we also found that the predominant type of Munda systems is D4; only two cases showed relative sex differentiation (i.e., FD6 and FD8). Notably, some systems of sibling terms that contain relative sex differentiation (F, FB, FD) are located in the coastal areas of India, the Nicobar Islands and the Southern part of the Malay Peninsula. A similar distribution can be observed for the term ‘horse’ in Austroasiatic.

(SHIMIZU Masaaki, MINEGISHI Makoto)

SYSTEM OF 'SIBLING' TERMS IN AUSTROASIATIC

- **B2**: 'elder sibling' / 'younger sibling'
- ▽ **C3**: 'elder brother' / 'elder sister' / 'little sibling'
- **D4**: 'elder brother' / 'elder sister' / 'little brother' / 'little sister'
- ⊕ **F2**: 'brother (for sister)' / 'sister (for brother)'
- ✓ **FB3**: 'older sibling' / 'younger sibling' / 'brother (for women)'
- FB4a** (Temiar): 'older sibling' / 'younger sibling' / 'older brother (for boys)' / 'older sister (for younger sister)'
- FB4b** (Car, Katu, Khmu): 'elder sibling' / 'younger sibling' / 'brother (for a female)' / 'sister (for a male)'
- ▽ **FC5**: 'elder brother' / 'elder sister' / 'younger sibling' / 'brother (for a female)' / 'older sibling (for same sex)'
- ✓ **FD6**: 'elder brother' / 'elder sister' / 'younger brother' / 'younger sister' / 'brother (for male)' / 'sister (for female)'
- FD8**: 'elder brother' / 'elder sister' / 'younger brother' / 'younger sister' / 'brother (for a sister)' / 'sister (for another sister)' / 'younger brother (for a brother)' / 'younger sister (for a brother)'

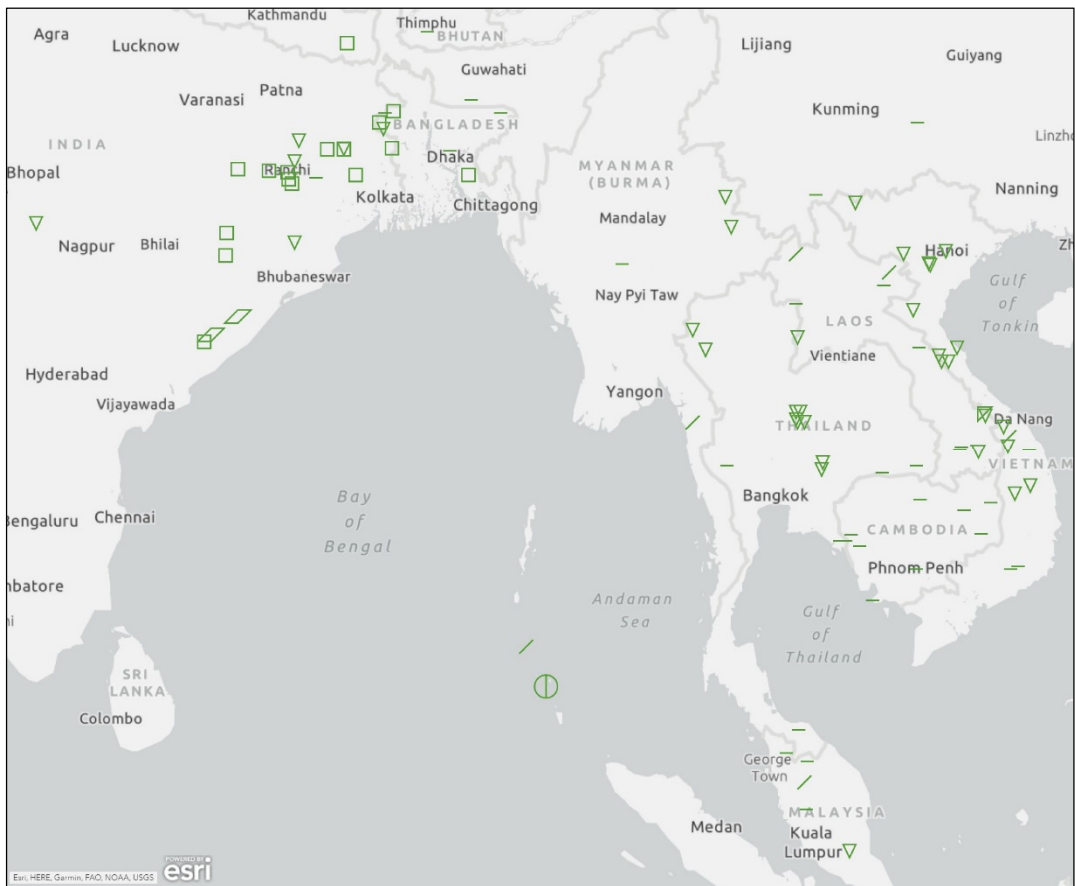


Figure 14.9.1: System of 'sibling' terms in Austroasiatic.

## System of ‘sibling’ terms in Austronesian

Austronesian language group show a variety of types regarding the system of ‘sibling’ terms. The most common types are relative age type (type B) and relative sex/age type (type FB). Undifferentiated sibling type (type A), skewed age type (type C), Relative sex type (type F) and relative sex/age type are also commonly found.

Type B, which differentiate only by age relative to the speaker can be found almost everywhere in the Austronesian world. It is frequently found in Taiwan, the Philippines, and Indonesia. It is, though less common, found in the Pacific islands as well.

Type FB, the system in which the speaker’s sex and the referent’s sex and age are relevant, spread mainly in the pacific but also in Papua and southern Philippines.

Type A, the undifferentiated type is found in the Philippines but also in Taiwan, Indonesia and the Pacific.

Type C, the skewed age type mostly show the system in which the elder sibling terms are differentiated by the referent’s sex, and the younger sibling is referred to by a single form. It is found in Sumatra and Java.

Type F, the relative sex type is predominantly found in Papua, but also in the Pacific. Type FE, the system in which the speaker’s sex and the referent’s sex is relevant are most commonly found in Papua and Solomon islands but also in the Pacific.

(UTSUMI Atsuko)

- A: Undifferentiated sibling type (a single form used for any sibling)
- B: Relative age type (elder sibling vs younger sibling)
- ▽ C: Skewed age type (typically separate terms according to sex for elder siblings, uniform term for younger siblings)
- ⓪ F: Relative sex type (both the speaker’s and the referent’s sex are relevant, with no age distinction)
- ／ FB: Relative sex/age type (speaker’s sex and the referent sex and age are relevant)
- ▽ FC: Relative sex/Skewed age type (Differentiated type 1)
- ⓪ FE: Relative sex/sex type

SYSTEM OF 'SIBLING' TERMS IN AUSTRONESIAN



Figure 14.10.1: The system of 'sibling' terms in Taiwan and the northern Philippines.



Figure 14.10.2: The system of 'sibling' terms in Indonesia.



Figure 14.10.3: The system of 'sibling' in Papua and the Pacific.

## System of ‘sibling’ terms in Tungusic

### 1. Classification

Almost of Tungusic languages are belonging to one type, that is C3:

C3 type

	[male]	[female]
[elder]		
[younger]		

C3 type has 3 terms for sibling: elder brother, elder sister, and younger sibling. In this type the feature of gender is not distinctive only in the younger generation.

And also D4 type is observed:

	[male]	[female]
[elder]		
[younger]		

D4 type has 4 terms for sibling: elder brother, younger brother, elder sister and younger sister.

### 2. Geographical distribution and interpretation

All Tungusic languages but Sibe has the C3 type system. Table 1 show example from Evenki as C3 type.

Table 1 Sibling terms in Evenki

	[male]	[female]
[elder]	akin	ekin
[younger]	nekun	

In reference to the sibling terms, in Evenki, for example, the terms of the elder siblings are same for the younger siblings

of their parents: see Table 1. In addition the terms for the elder siblings of the parents are same as the parents of their parents, that is the grandfather and the grandmother. The family terms are distinguished by the ages of ‘I’ and the parents, not by the generation.

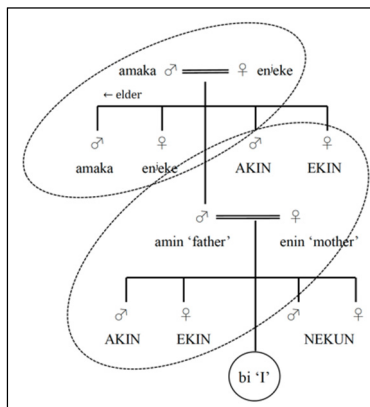


Figure 14.11.1: Family terms in Evenki.

Only Sibe has D4 type system as table 2.

Table 2 Sibling terms in Sibe.

	[male]	[female]
[elder]	agə	gəxə
[younger]	du	Nun

The forms of *agə* ‘elder brother’, *gəxə* ‘elder sister’ and *nun* ‘younger sister’ are presumed as the cognates of the other Tungusic, so the term *du* ‘younger brother’ must be a borrowing from other language. It is considered that Sibe also had originally C3 type and had been changed to D4 type by the language contact.

(MATSUMOTO Ryo)



SYSTEM OF 'SIBLING' TERMS IN TUNGUSIC

- ▽ C3
- D4



Figure 14.11.2: System of 'sibling' terms in Tungusic.

## System of ‘sibling’ terms in Uralic

### 1. Classification

Uralic languages are divided into 4 types on how to distinguish the terms of siblings as follow:

#### D4 type

	[male]	[female]
[elder]		
[younger]		

D4 type has 4 terms for sibling: elder brother, younger brother, elder sister and younger sister:

#### E2 type

	[male]	[female]
[elder]		
[younger]		

E2 type has 2 terms for sibling: brother and sister. The feature whether the sibling is elder or younger than oneself is not distinctive.

#### C3 type

	[male]	[female]
[elder]		
[younger]		

C3 type has 3 terms for sibling: elder brother, elder sister, and younger sibling. In this type the feature of gender is not distinctive only in the younger generation.

#### A1 type

	[male]	[female]
[elder]		
[younger]		

A1 type has only 1 form for sibling. Neither gender nor age are involved for the sibling term.

### 2. Geographical distribution and interpretation

D4 type is situated in the west where the languages are very next to the Indo-European languages such as Germanic and Slavic. E2 type is widely spread around or in the east of the area of D4 type. That seems peripheric regarding D4 type as central, in which the sibling system would be changed under the influence of languages contact. On the other hand, in the east over the Ural there is C3 or A1 type is widely observed. This type is very similar to Tungusic neighboring to them.

For example, table 1 shows the system of Mari as D4 type:

Table 1 Mari

	[male]	[female]
[elder]	iza	aka
[younger]	sholyo	shüzhar

In D4 type only Mansi has also E2 type, by which it is subclassified in D4b, and the others in D4a

Table 2 shows the system of Finnish as E2 type. If you want to distinguish the elder and the younger, the compound forms are used, *isoveli* ‘lit. big-brother’ and *pikkuveli* ‘lit. small-brother’

Table 2 Finnish

	[male]	[female]
[elder]	veli	sisar
[younger]		

SYSTEM OF 'SIBLING' TERMS IN URALIC

Table 3 shows the system of Nenets as C3 type. If you want to distinguish between gender in the younger sibling, the compound are used, *nye papako* 'lit. woman younger-sibling', but *papa* basically means male sibling without the attribute *xasawa* 'man'. In this type, the words for an elder brother and an elder sister has also meanings of an uncle and an aunt respectively.

Table 3 Nenets 1

	[male]	[female]
[elder]	nyaka	nyabako
[younger]	papa	

Nenets and Enets, which have C3 type, have also A1 type as table 4. The word *nya* has also meanings of 'friend, spouse'.

Table 4 Nenets 2

	[male]	[female]
[elder]	nya	
[younger]		

Type C3a has the double system of C3 and A1, on the other hand Khanti has only C3 type, which is subclassified into C3b in the map.

(MATSUMOTO Ryo)

- ▽ C3a
- ▽ C3b
- D4a
- ▣ D4b
- ◇ E2

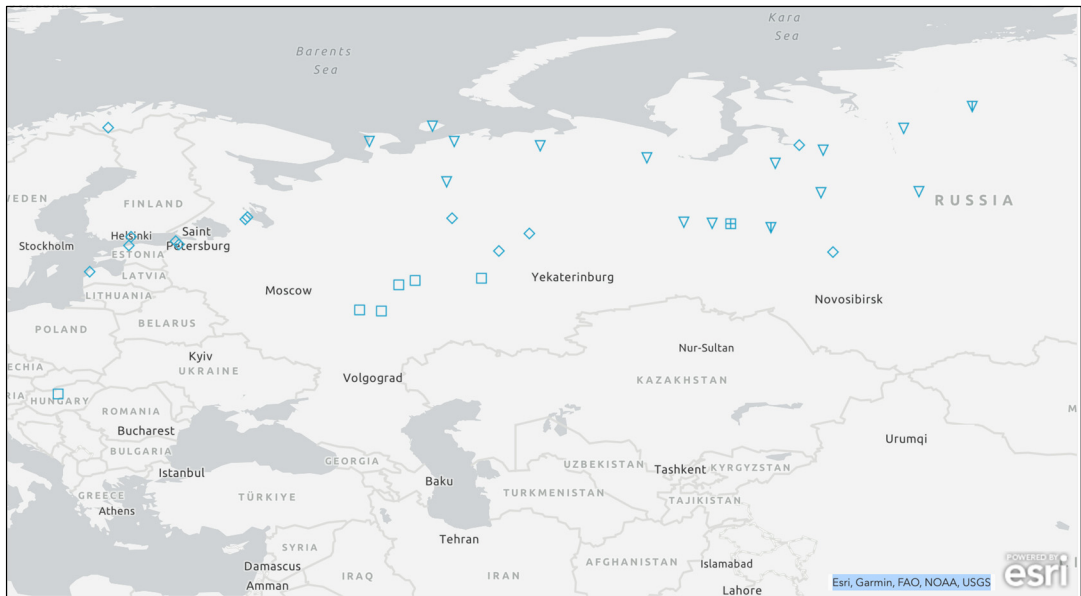


Figure 14.12.1: System of 'sibling' terms in Uralic.

## System of ‘sibling’ terms in Mongolic and Turkic

### 1. Classification

#### Type A1 (Undifferentiated type)

Turkmen has many terms for siblings, but, based on the information in some dictionaries (S. Altaev et al. 1986-1987, etc.) and from A. Husainov, we can say that they have this type of system.

dogan
-------

Turkmen

Age and sex differences are created by attaching *uli* ‘big,’ *kiči* ‘small,’ *oglan* ‘boy,’ *giz* ‘girl,’ etc. to the term.

Kumyk has the forms *kardaš* for “brother” and *kizkardaš* for “sister,” but as the latter is a compound with *kiz* ‘girl’ and *kardaš*, the language originally had this type.

The situation is similar in Gagauz, but it also has independent words for “elder brother” (*aga*, etc.) and “elder sister” (*kaku*, etc.).

Turkish also has this system with *kardeş* in addition to type C3.

#### Type B2 (Relative-age type)

The information in a dictionary the Peace Corps compiled shows that Turkmen also employs this system.

dogan
jiği

Turkmen

Sex differences are created by attaching *oglan* ‘boy’ or *giz* ‘girl.’ In addition, Turkmen has the terms *aga* ‘elder brother’ and *ini* ‘younger brother.’

#### Type C3 (Skewed-age type)

Mongolic languages except the Tacheng dialect of the Dagur language in Xinjiang, and Turkic languages spoken in Siberia (Dolgan, Tuvan, Tofalar, Khakas, Shor) and near the Black Sea (Turkish, Crimean Tatar) have a sex distinction only for older siblings.

ax	əgč	akī	ugba
dū		dujma	

Mongol

Tuvan

Sex differences for younger siblings are created by attaching a word meaning “girl” (*oxin* in Mongol, *kis* in Tuvan) to the form to distinguish a younger sister from a younger brother.

Sarig Yughur has a sex distinction only for younger siblings.

aga	
ənə	səŋnə

Sarig Yughur

#### Type D4 (Age/sex type)

This type is found in Turkic languages in Central Asia (Tatar, Kazakh, Uzbek, Uighur), the regions west of it (Bashkir, Chuvash), Siberia (Sakha, Altai), and Gansu and Qinghai provinces in China (Salar).

agaj	apaj	ubaj	ed’ij
ene	hejle	biraat	balis

Bashkir

Sakha

Sakha in Siberia has another word, *surus*, which means “younger brother of an elder sister,” but it is rarely used in modern spoken language; therefore, the Sakha

system can be classified as a D4 type (personal communication from F. Ebata).

Counting *gəzaga* ‘elder sister,’ which consists of *gəz* ‘girl’ and *aga* ‘elder brother,’ as a single word, we can say Sarig Yughur has this type.

**Type E2** (Sex type)

This is a type found in Turkic languages in western Asia (Azeri, Turkmen, Kashkay, Khalaj), Siberia (Chulyum, Khakas), and Europe (Karaim).

kardaš	baĵi	lāla	bāĵo
Azeri		Khalaj	

(The Khalaj information Y. Kuribayashi provided)

In Azeri, an age distinction is created by adding the adjective *böjük* ‘big’ or *kičik* ‘small.’ In Khalaj, younger siblings are specified by adding the word *bala* ‘small.’

Karaim has *karındaš* ‘brother’ and *tuvdux* ‘sister,’ but it also has *aka* ‘elder brother,’ *tota* ‘elder sister,’ and *siŋli* ‘younger sister.’

Turkmen may partially include this type of system.

**Type FC4** (Relative-sex/Skewed-age type)

The Tacheng dialect of the Dagur language in Xinjiang has this type. They have two terms for elder sister, *əkā* ‘elder sister of a younger brother’ and *əkiš* ‘elder sister of a younger sister.’ (W. Yu et al. 2008)

akā	əkā əkiš
dəw	

Dagur (Tacheng dialect)

What is interesting here is that the other dialects of the same language spoken in the northeastern part of China have their cognates but have no such distinction in usage (personal communication from Mōngkedalai).

**Type FD5** (Relative sex/age/sex type)

Kyrgyz in Central Asia has this type. It has two terms for female younger siblings, *karındaš* ‘younger sister of an elder brother’ and *siŋdi* ‘younger sister of an elder sister.’ (H. Kaji et al. 2015)

bajke	eje
ini	karındaš siŋdi

Kyrgyz

**2. Geographic distribution and interpretation**

The abovementioned typology mostly matches van Berlo’s (2020: 691-701), and the differences may be dialectal.

The Middle Mongol language had a D4-type system distinguishing *de’ū* ‘younger brother’ and *dōi* ‘younger sister.’ Ozawa (1986: 308-309) mentions a modern dialect of Mongol that preserves the word *dōi*. The almost uniform distribution of type C in modern Mongolic can be genetic and areal. Several types are found in modern Turkic languages, and their geographic distribution shows that areal features are stronger.

(SAITÔ Yoshio)

SYSTEM OF 'SIBLING' TERMS IN MONGOLIC AND TURKIC

		<b>Mongolic</b>	<b>Turkic</b>
<b>A1</b>	Undifferentiated type		○
<b>B2</b>	Relative-age type		—
<b>C3</b>	Skewed-age type	▽	▽
<b>D4</b>	Age/sex type	□	□
<b>E2</b>	Sex type	◇	◇
<b>FC4</b>	Relative-sex/Skewed-age type	▽	
<b>FD5</b>	Relative-sex/age/sex type		▱

SYSTEM OF 'SIBLING' TERMS IN MONGOLIC AND TURKIC

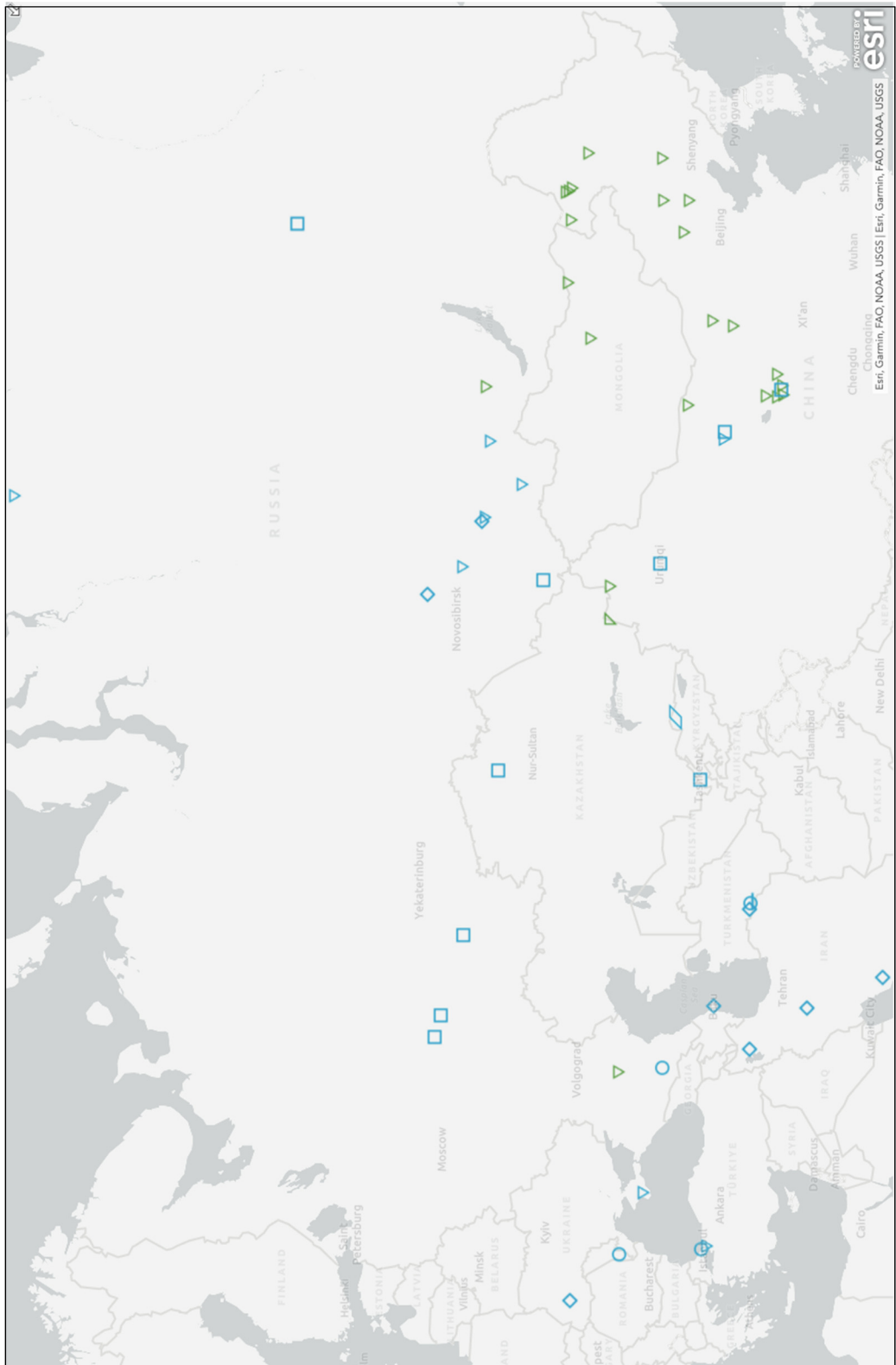


Figure 14.13.1: System of 'sibling' terms in Mongolic and Turkic.

## System of ‘sibling’ terms in South Asia

I describe the languages of Indo-Aryan (IA), some small language families/branches, and language isolates in South Asia.

In these maps, systems of sibling terms are classified as 6 large categories: A, B, C, D, E, and FE types. The number after the individual type name shows the one of terms in the system. If a language has an inclusive concept, that was given priority. That is, when it has ‘elder sister’ with ‘younger sister’ but also ‘sister’, the latter was taken as representative.

Types A and B can be seen only in the Andamanese family. Type C is scatteringly found on the Maldives, in central India, and in the Nuristan province of Afghanistan. Languages with type D are in periphery: Sri Lanka, Nepal, northeastern India, Kashmir, and Tajikistan. Most languages are of type E both in and outside SA. And type FE is detected only in Burushaski lects here.

As mentioned above, the most major type is E consists of ‘bro(ther)’ and ‘sis(ter)’. Note that all of the languages of this type are either Indo-Aryan or Nuristani, namely all non-Indo-European languages in south Asia do not employ the system. In ancient time in South Asia, Sanskrit already had this type of the system of sibling terms, *bhrātṛ* भ्रातृ ‘bro’ versus *bhaginī* भगिनी or *svásṛ* स्वसृ ‘sis’. And then, many descendant languages have retained the distinction based on sex. For ‘sis’ terms, *bhaginī* developed in most areas and *svásṛ* only in the northwestern group spoken almost in the Hindukush range. The etyma of *bhrātṛ* are PII *\*bhráHtā* and PIE *\*bhréh₂tēr* (cf. English *brother*), and of *svásṛ* are PII *\*swásā* and PIE *\*swésōr* (cf. English *sister*), while the etymon of *bhaginī* is unknown and

unseen in Iranian and Nuristani. And so, it is certainly considered Proto-Nuristani also had *\*brātā* ‘bro’ and *\*sāsā* ‘sis’.

Type-D IA languages in peripheral areas seem to have developed relative age distinction anew, plus sex which is held inherently. Beside them there are two non-IE languages of this type, Kusunda in Nepal and Vedda in Sri Lanka. Vedda sibling terms are borrowed from Sinhala (IA), as well as almost Kusunda ones from any IA language.

The third major type is C. Dhivehi (IA) and Nihali (isolated) have ‘elder bro’, ‘elder sis’, and ‘younger sibling’. While type Cb Lambadi (IA) and Waigali (Nur.) employ terms of ‘elder bro’, ‘younger bro’, and ‘sis’; And type Cs Prasun (Nur.) has ‘elder sis’, ‘younger sis’, and ‘bro’. Those of types Cb and Cs developed honorific new term for either elder brother or sister.

The type FE is for Burushaski here. They have three sibling words, that is, *-ço* ‘same sex sibling’, *-ulus / -húles* (EB/WB) ‘bro for women’, and *-yás(t)* ‘sis for men’.

Andamanese languages have either A or B types. Bea and Kédé are of type A, employ *ardoati* and *akarepu* for all ‘sibling’. Jeru and Mixed Great Andamanese look belong to type B with two terms *uttoa thue*, *ototoatue* ‘elder sibling’ and *arasulu thuo*, *araičulute* ‘younger sibling’. However, in fact, for MGA, *uttoa thue* can be understood as ‘who born before’ and *arasulu thuo* as ‘who born after’ (standard of comparison is expressed by a possessor proclitic), therefore perhaps it is better to say that these languages do not have sibling term itself at all.

(YOSHIOKA Noboru)



SYSTEM OF 'SIBLING' TERMS IN SOUTH ASIA

A1: Undifferentiated sibling type	○	: sib(ling)	: 2 lgs.
B2: Relative age type	—	: elder sib / younger sib	: 2 lgs.
C3: Skewed age type	▽	: elder bro(ther) / elder sis(ter) / younger sib	: 2 lgs.
- C3b variant	▷	: elder bro / younger bro / sis	: 2 lgs.
- C3s variant	◁	: elder sis / younger sis / bro	: 1 lg.
D4: Age/sex type	□	: elder bro / elder sis / younger bro / younger sis	: 8 lgs.
E2: Sex type	◇	: bro / sis	: 78 lgs.
FE3: Relative sex/sex type	◊	: same sex sib / bro (for women) / sis (for men)	: 3 lgs.

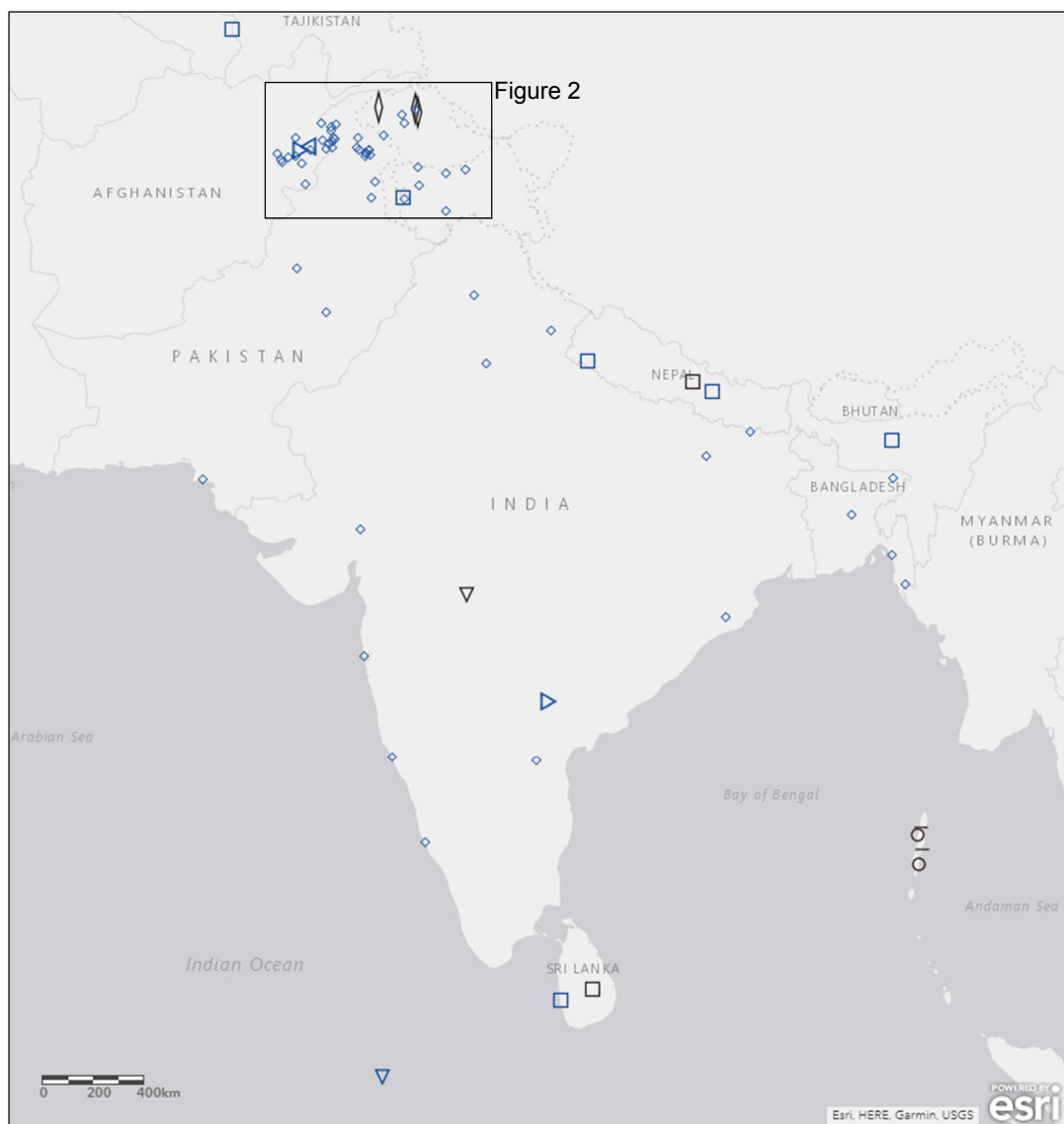


Figure 14.14.1: System of sibling terms in SA: Indo-Aryan, Nuristani (both in navy blue), Andamanese, and language isolates (those in black).

## SYSTEM OF 'SIBLING' TERMS IN SOUTH ASIA

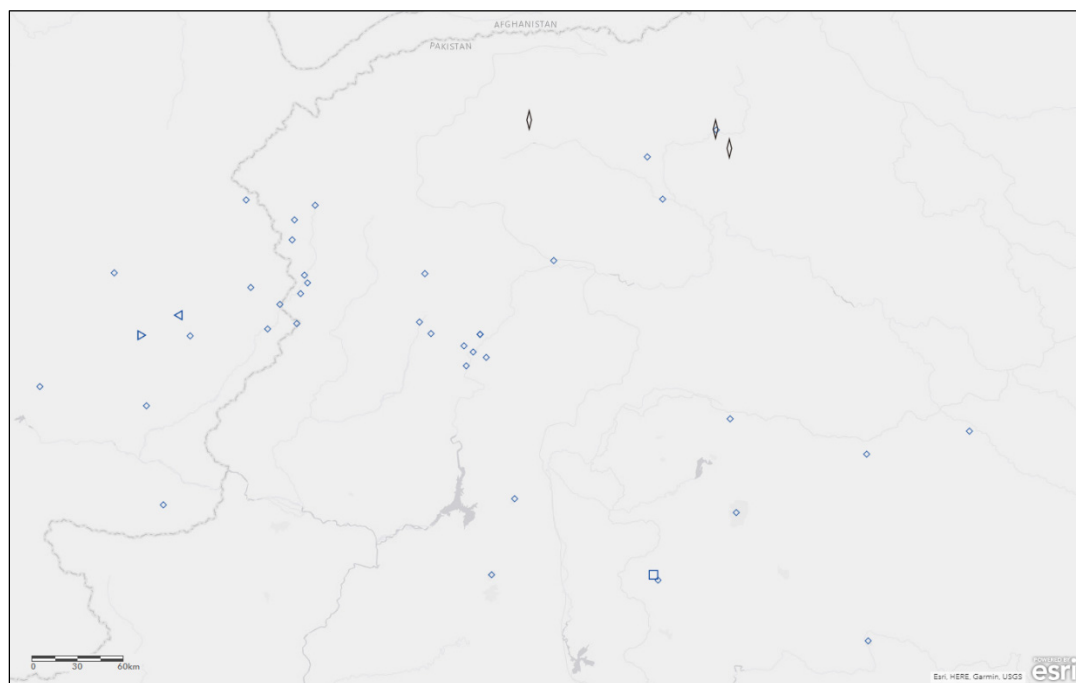


Figure 14.14.2: System of sibling terms in northern Pakistan and northeastern Afghanistan (Part of Figure 1): Indo-Aryan, Nuristani (both in navy blue), and Burushaski (in black).

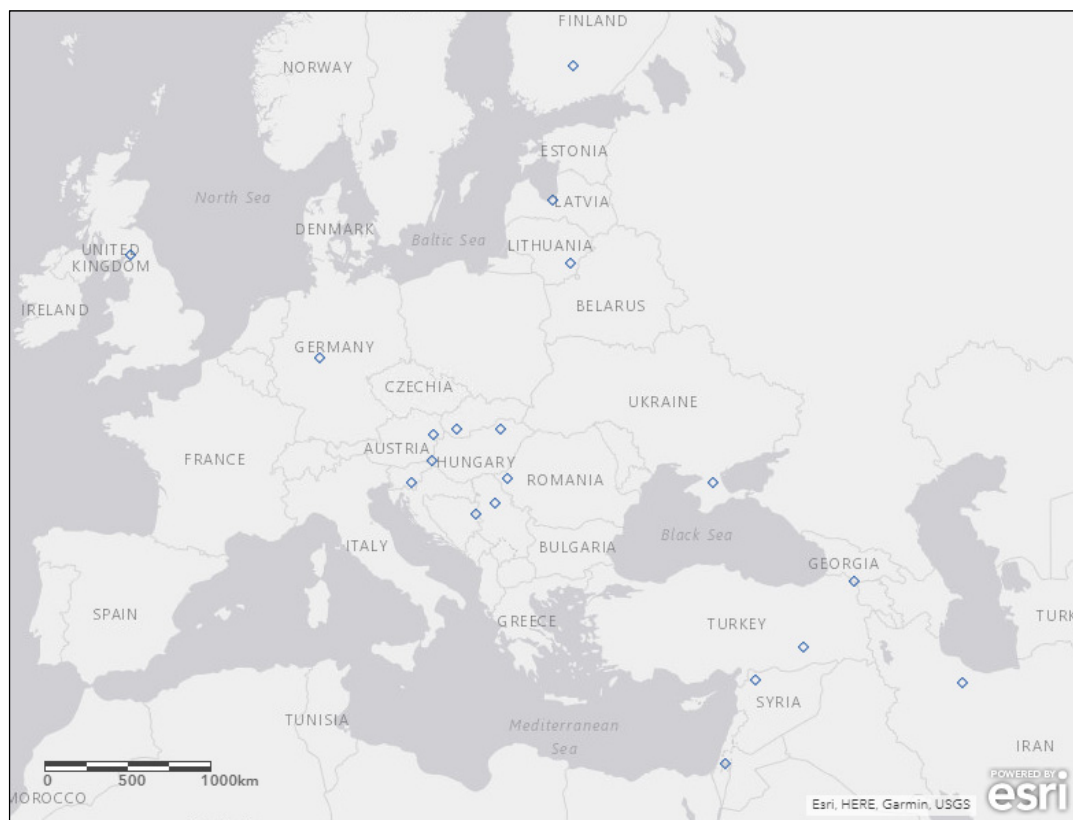


Figure 14.14.3: System of sibling terms in Indo-Aryan languages outside South Asia.

## System of ‘sibling’ terms in Dravidian

Kinship terminology in Dravidian is known to reflect Dravidian kinship organization where cross cousin marriage is encouraged while parallel cousins are unmarriageable. In most languages spoken in peninsular India, terms for siblings are applied to parallel cousins and some affinal relatives but not cross cousins.

Relative age reference of D4 type in terms for siblings is another of Dravidian characteristics according to Trautmann (1981) as is shown on the map. E2 type without it appears to be restricted to minority tribal languages spoken among predominantly Indo-Aryan or Iranian population. To be noted is that languages marked as E2 may have address terms for elder siblings, for addressing elder relatives by name is usually avoided in Indian culture. E2 marking on the map is based on the reference terms glossed as ‘brother’ or ‘sister’ only. Konda, which has words for ‘brother’ and ‘sister’ distinct from D4 forms, is marked as D4b.

The semantic change from ‘sibling’ to ‘younger sibling’ in peripheral Indo-Aryan languages is mentioned in Matsumoto (2000). In fact, morphological asymmetry between the elder and younger sibling terms may be ascribed to a similar process in Dravidian as a whole, whose D4 terminology is exceptional as a language with sex-based gender system according to Prof. Matsumoto.

Reference terms for relatives appear to have been obligatorily possessor marked in classical Tamil and some of the modern tribal Dravidian languages. The fossilized

erstwhile 3<sup>rd</sup> person possessor marker *ta-* is observed in reference terms for parents and younger siblings across the language family. (DEDR #364, #3015, #3067, #3085, #3136). The terms for elder siblings with *ta-* prefixed, by contrast, are found only in Gondi dialects which still head-mark the kinship terms. This indicates that the use of original address terms for elder siblings as the reference term is relatively recent and that arguably it could have triggered the semantic change of the erstwhile E2 reference terms.

The kinship term system of D4a type reported in Hill Maria Gondi has two different systems for men and women. The system for women is a skewed age type without the word meaning ‘younger sister’ for men.

A system of the skewed age type is reported in Toda, a tribal language in Nilgiri Hills. The compound *-wir-fed-* ‘after-born’ (DEDR #4422) is the term for ‘younger sibling’ with an obligatory possessor prefix and an optional gender suffix. The first part is a cognate of Classical Tamil *piṇ* (DEDR #4205) which forms terms for ‘younger sibling’ with gender suffixes.

Of the two FD type systems, FD6a reported in Mullu Kurumba dialect of Malayalam is a combination of D4 and F2. One’s opposite-sex sibling in a cross-cousin marriage system is one’s children’s potential parent-in-law, so the F2 terms also refer to children’s actual parent-in-laws following the Dravidian kinship pattern.

SYSTEM OF 'SIBLING' TERMS IN DRAVIDIAN

FD6b is found in Northern non-Brahmin dialects of Tulu. The original system appears to have been a kind of relative sex/age type (FB3) with sex marked by the gender suffix. The terms for the 'opposite-

sex sibling' are retained only for the relation between the 'elder brother' and 'younger sister'.

(KODAMA Nozomi)

- |      |                                     |   |
|------|-------------------------------------|---|
| C3   | Skewed age type                     | ▽ |
| D4   | Age/sex type                        | □ |
| D4a  | Age/sex type (C3 for women)         | ■ |
| D4b  | Age/sex type + Sex type             | ▣ |
| E2   | Sex type                            | ◇ |
| FD6a | Relative sex/age/sex type (D4 + F2) | ▤ |
| FD6b | Relative sex/age/sex type (<*FB3x2) | ▥ |

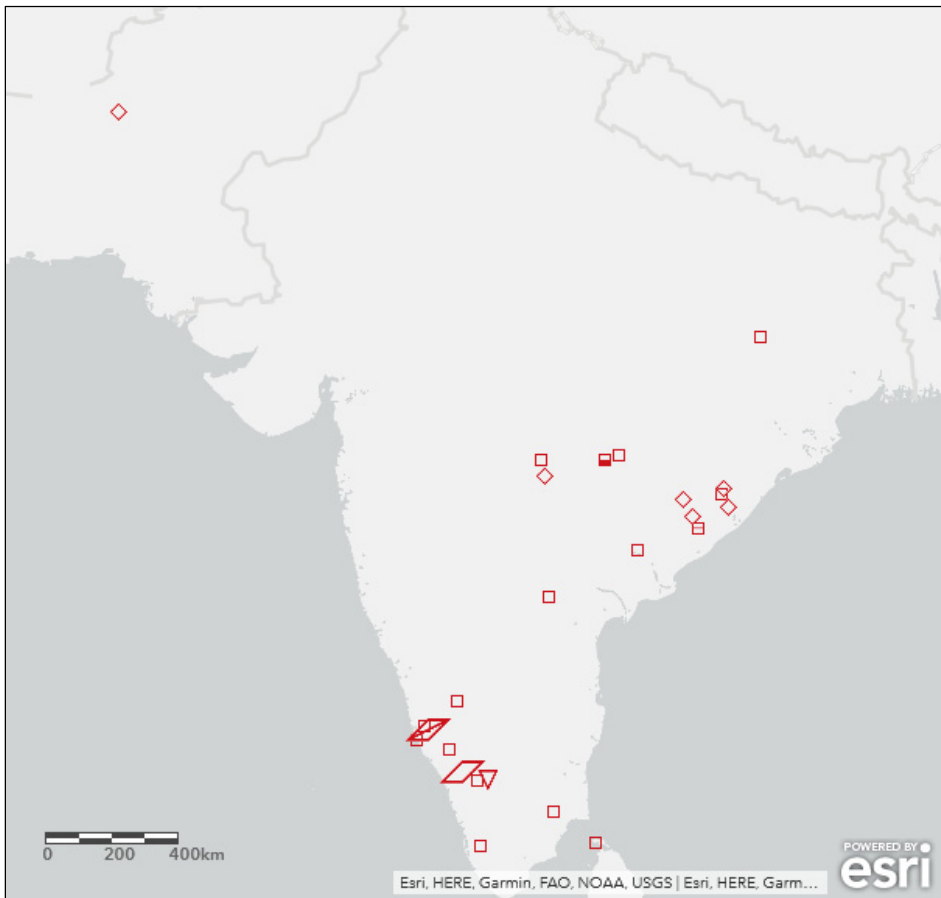


Figure 14.15.1: System of 'sibling' terms in Dravidian.

## System of ‘sibling’ terms in Iranian

There are four systems of sibling terms in Iranian. Type E2, D4, C3a and C3b. Type E2 is found in the vast majority of Iranian languages. Type E2 is estimated to be an inherited system of sibling terms in Proto-Iranian (PIr. *\*brātar-* ‘brother’ and *\*h<sub>2</sub>u<sub>2</sub>ahar-* ‘sister’, ultimately from PIE *\*b<sup>h</sup>reh<sub>2</sub>ter-* or *\*b<sup>h</sup>rāter-* ‘brother’ and *\*s<sub>2</sub>uesōr* ‘sister’ respectively). Almost all Iranian languages retain these inherited forms as kinship terms.

In addition to E2, some languages have developed into Type D4. The best example is Tajik (*ака aka* ‘elder brother’ < Uzbek *aka* ‘id.’, *уко uko* ‘younger brother’ < Uzbek *uko*, *бapодap barodap* ‘brother’ < Iranian, *додap dodap* ‘brother, younger brother’, *ана апа ana apa* ‘elder sister’ < Uzbek *opa* ‘id.’, *xoҳap xohar* ‘sister, younger sister’).

Heavily influenced by Turkic Uzbek, Tajik shows the shift from Type E to D.

Some languages also have similar type to Type D, but not as drastic as Tajik, and may not be due to language contact.

Type C3a and C3b are sporadically found in the peripheral regions of the Iranian world. For example, Ormuri is Type C3a, with a relative age distinction in male sibling (*marzā* ‘younger brother’ *lāla* ‘elder brother’).

C3b is observed only in Talysh, spoken in Azerbaijan and Iran, with an elder/younger distinction in female sibling (*hovæ* ‘(younger) sister’ and *dodo* ‘elder sister’).

In all cases, a new form for elder sibling is introduced in the inherited system, then inherited term for ‘male/ female sibling’ begin to shift to ‘younger brother/ sister’.

Some languages are difficult to classify. For example, Persian has (at least) two terms denoting elder brother *برادر بزرگ baradar-e bozorg* and *کاکا kaka* (obsolete). Many other languages also have special words for ‘elder brother’, along with equivalent forms such as ‘male sibling’ + ‘elder, big’. Judging from the forms, Persian is classified into type C3 (elder brother/ younger brother, and female sibling).

In the Persian case, however, thanks to rich resources, E2 seems appropriate because that the latter word *kaka* is obsolete, and the most common word denoting ‘elder brother’ is *baradar-e bozorg*, which consists of *baradar* ‘male sibling’ and *bozorg* ‘big’.

Nevertheless, it is difficult to decide the exact types of some Iranian languages because there are few clues to judge which is obsolete or not commonly used.

Although I here classified such languages as Type C, they may be counted as type E after careful scrutiny of their texts.

(IWASAKI Takamasa)

SYSTEM OF 'SIBLING' TERMS IN IRANIAN

- ▽ C: Skewed age type  
C3a 'elder brother' / 'little brother' / 'sister'
- ▽ C: Skewed age type  
C3b 'brother' / 'elder sister' / 'littler sister'
- D: Age/ sex type  
D4 'elder brother' / 'little brother' /  
'elder sister' / 'little sister'
- ◇ E: sex type (brother/sister type)  
E2 'brother' / 'sister'

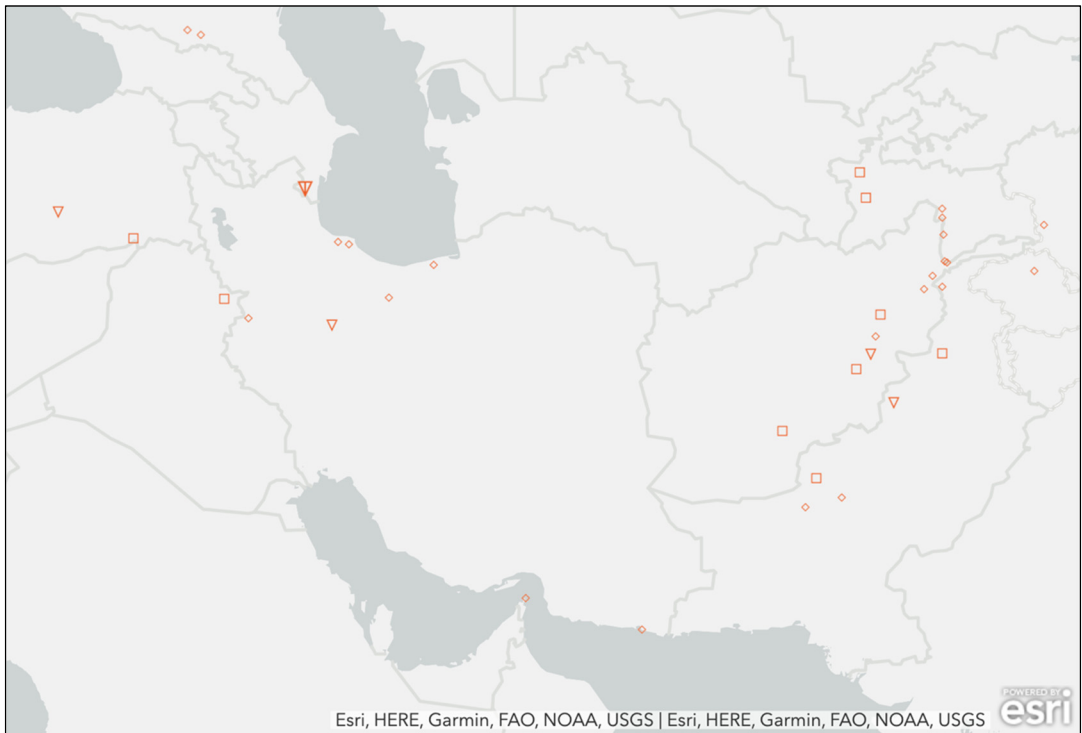


Figure 14.16.1: System of 'sibling' terms in Iranian.

## System of ‘sibling’ terms in Semitic

Type E2 is widespread among Semitic languages. But the words of ‘sister’ (Arabic *uχt*) are made by adding a feminine ending *-t* to the words ‘brother’ (*aχ*), although the vowel of some forms changes. In this sense, these can be said to close to Type A1.

The Arabic form of the sibling is *aχ* ‘brother’ and *uχt* ‘sister’ with a feminine ending *-t*. The form of ‘brother’ of Cairene *aχχ* and Sudanese, Chadian and Palestinian *aχu* are added a root consonant *χ* or *w* for making three consonantal root. Juba Arabic *akuu* and Ki-Nubi (Creole of Arabic) *akú* are related to Sudanese form. In Maltese *\*χ > h*, thus *hu / oht*. The Cypriot *xajjt-* ‘brother’ is a diminutive form.

Sibling of Ki-Nubi, a creole of Arabic, is type A1: *akú*. When making a distinction, ‘man’ or ‘woman’ is added: *akú rági* ‘brother’, *akú mária* ‘sister’ (cf. Cairene Arabic *ra:gil* ‘man’, *mara* ‘woman’).

The Hebrew forms are *aχ / aχot*. The Aramaic forms are *aha: / ha:θa* (Mandaic), *ħo:na / ħo:θa* (Ma’lula in Syria), *əxunə / xətə* (Assirian). They share a consonantal root of *\*χ*. The ending *-a* is originally the definite article and *θ < \*t* is the feminine ending. *n* of *ħo:na* is probably added through the analogy of *θ*.

The Ethiopic forms also share the root *\*χ*. *ħu / ħət* (Tigre), *ħaw / ħafti* (Tigrinya). Amharic has the cognate form of sister *əhət*, but change the word ‘brother’ to *wändəmm*.

The South Arabian languages do not share the cognate with other Semitic, although they share the feminine ending *-t*: *qáqa / ?énneh* or *?ašhi / ?éšhet* (Soqotri), *?avá / vit* (Jibbali), *va: / vajt* (Mehri).

(NAGATO Youichi)

- A1 akú (Ki-Nubi)
- ▽ C2 younger: *aχū / uχt*  
elder: *akā / apā* (Bukhari Arabic)
- ◇ E2

Arabic  
*aχ / uχt*  
*aχχ / uχt* (Cairene)  
*aχu / uχt, uχut, əχt* (Sudanese)  
*aχu / aχut* (Nigerian)  
*akuu / okot* (Juba)  
*hu / oht* (Maltese)  
*xajjt- / oxt* (Cypriot)

Aramaic  
*aha: / ha:θa* (Mandaic)  
*ħo:na / ħo:θa* (Ma’lula)  
*əxunə / xətə* (Assirian)

Hebrew  
*aχ / aχot* (Hebrew)

South Arabian  
*?avá / vit* (Jibbali)  
*va: / vajt* (Mehri)  
*qáqa / ?énneh* (Soqotri)  
*?ašhi / ?éšhet* (Soqotri)

Ethiopic  
*ħu / ħət* (Tigre)  
*ħaw / ħafti* (Tigrinya)  
*wändəmm / əhət* (Amharic)

SYSTEM OF 'SIBLING' TERMS IN SEMITIC

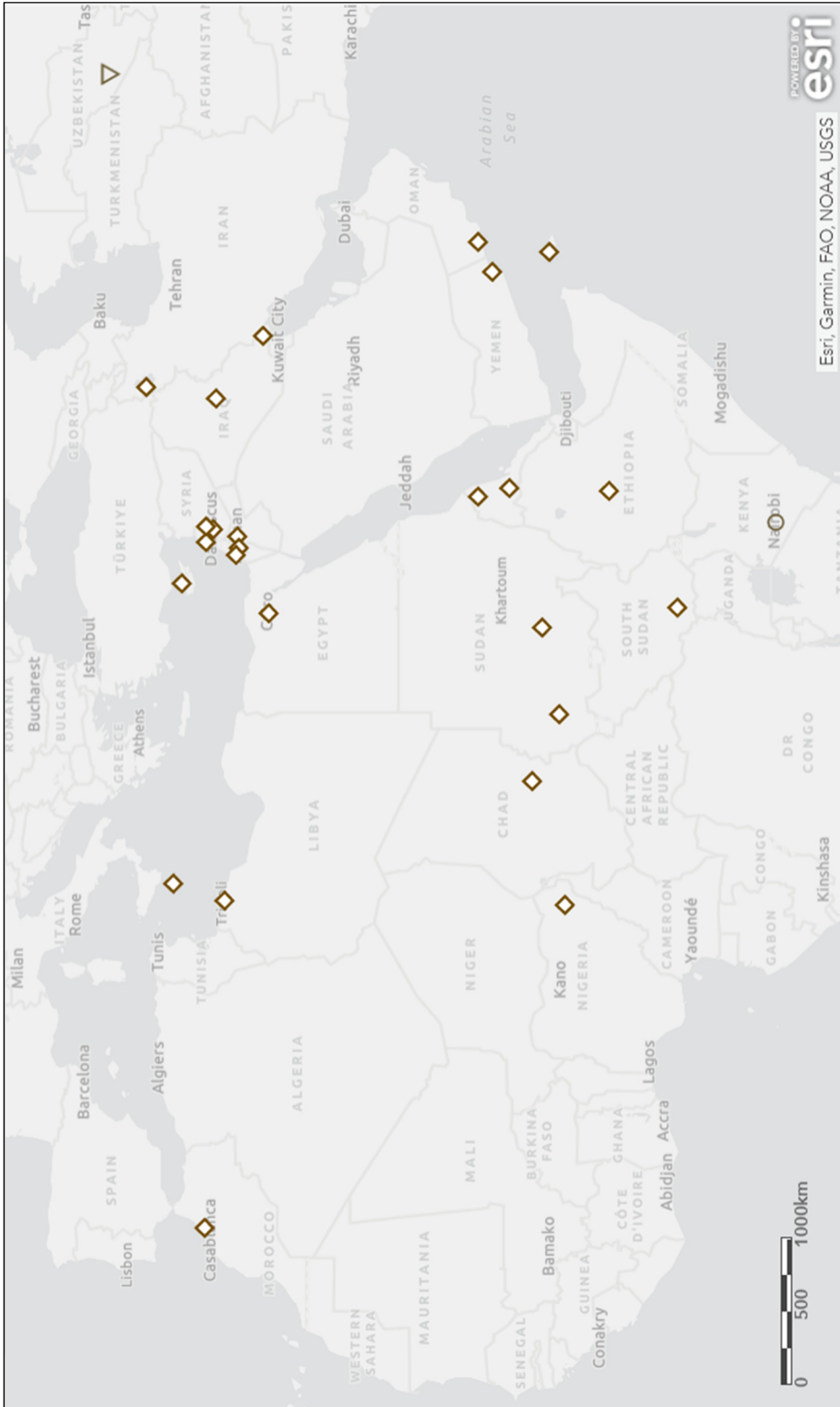


Figure 14.18.1 : System of 'sibling' terms in Semitic.



## System of ‘sibling’ terms in Nilo-Saharan

Type A1 ‘undifferentiated sibling type’ (e.g., Dar Daju Daju *idé* ‘sibling’) is common among Central Sudanic languages in southern Chad and Kadu languages in the Nuba Mountains in Sudan and sporadically attested in Eastern Sudanic sub-branches (Daju, Temeinian, Nilotic, Surmic).

Type B1 ‘relative age type’ is always attested in combination with another system, as shown below.

Type C3 ‘skewed age type’ (e.g., Beria *kiré* ‘elder brother’ vs. *kinnà* ‘elder sister’ vs. *kósó* ‘younger sibling’) is a rare type attested in Turkana, Northern Gumuz, Beria and Tudaga. Turkana distinguishes them with masculine, feminine and neutral/diminutive prefixes (*lo-kaato* ‘elder brother’ vs. *na-kaato* ‘elder sister’ vs. *i-kaato* ‘younger sibling’). In Northern Gumuz, *aḷá* ‘elder brother’ and *oḷá* ‘elder sister’ seem to share a root, but *maatsá* ‘younger sibling’ does not. Beria and Tudaga use different roots for all three concepts.

Type E2 ‘sex type’ is the prevalent type with two major sub-types. Type E2a with two different roots for the two terms (e.g., Berta *agudi* ‘brother’ vs. *bába* ‘sister’) is attested in the Koman, Kadu, Central Sudanic, Mabang, Nubian, Berta, Taman, Eastern Jebel, Surmic and Nilotic branches. Type E2b, which combines a common root for ‘sibling’ and (often fossilized) gender prefixes (e.g., Bari *lujaser* ‘brother’ vs. *kinjaser* ‘sister’), is attested in Eastern and Western Nilotic and Ik (Kuliak), and is geographically concentrated in East Africa.

Type FB4 ‘relative sex/age type’ is attested only in Songhay branch (e.g., Zarma *beere* ‘elder sibling of the same sex’ vs. *kayne* ‘younger sibling of the same sex’ vs. *arme* ‘sister (as referred to by her brother)’ vs. *wayme* ‘brother (as referred to by his sister)’). The last two terms consist of *aru* ‘male’ or *way* ‘female’ and an obscure root *-me*. Heath (1999: 368) notes

on Koyra Chiini that they are two distinct systems and ‘while there is no fixed rule, the usual pattern is to use the seniority subsystem for parallel-sex siblings and the gender subsystem for cross-sex siblings.’

There are four more types of languages in which two to three systems are coexistent (but their usage pattern is unidentified): Type A1/B2 is attested in Kanuri (*yâana* ‘sibling’ / *yaá* ‘elder sibling’ vs. *karámi* ‘younger sibling’). Type B2/E2 is attested in three languages spoken in the Wadai-Darfur region, Midob Nubian (*èrkà* ‘elder sibling’ vs. *pèskà* ‘younger sibling’ / *ééníci* ‘brother’ vs. *éeshí* ‘sister’) and two Taman languages, Abu Sharib and Assangori, if Songhay languages are to be excluded from this category. Type C3/E2 is attested in Fur (*bara* ‘brother’ vs. *niu* ‘sister’ / *bain* ‘elder brother’ vs. *dada* ‘elder sister’ vs. *ditan* ‘younger sibling’). Type A1/B2/E2 is found in Tama (*nàr* ‘sibling’ / *àúd* ‘younger sibling’ vs. *ájò* ‘elder sibling’ / *axur* ‘brother’ vs. *eye* ‘sister’). Except Kanuri, all these languages are concentrated in the Wadai-Darfur region, and as such this type could be regarded as an area feature.

Although we do not consider them in this study, there are three points to be made for Nilo-Saharan sibling terms. First, in some languages the sibling term is synonymous with parallel-sex cousin (e.g., Mabaan *mod* ‘brother, male parallel-sex cousin’ vs. *kow* ‘sister, female parallel-sex cousin’). Second, some languages distinguish ‘full’ and ‘half’ (i.e., sharing the father but not the mother) siblings (e.g., Turkana *lo/na/i-kaato* ‘full sibling’ vs. *lo/na/i-kaapa* ‘half sibling’). Third, some languages use different terms depending on person (e.g., Majang *dèdè* ‘my sibling’ vs. *máná* ‘another’s sibling’; Ik *ede* ‘my brother’, *leo* ‘your brother’, *leata* ‘his/her brother’, *yea* ‘my sister’, *yao* ‘your sister’, *yeata* ‘his/her sister’).

(NAKAO Shuichiro)

SYSTEMS OF 'SIBLING' TERMS IN NILO-SAHARAN

- A1: Undifferentiated sibling type
- B2: Relative age type
- ▽ C3: Skewed age type
- ◇ E2a: Sex type (two roots)
- ◊ E2b: Sex type (one root)
- ／ FB4: Relative sex/age type

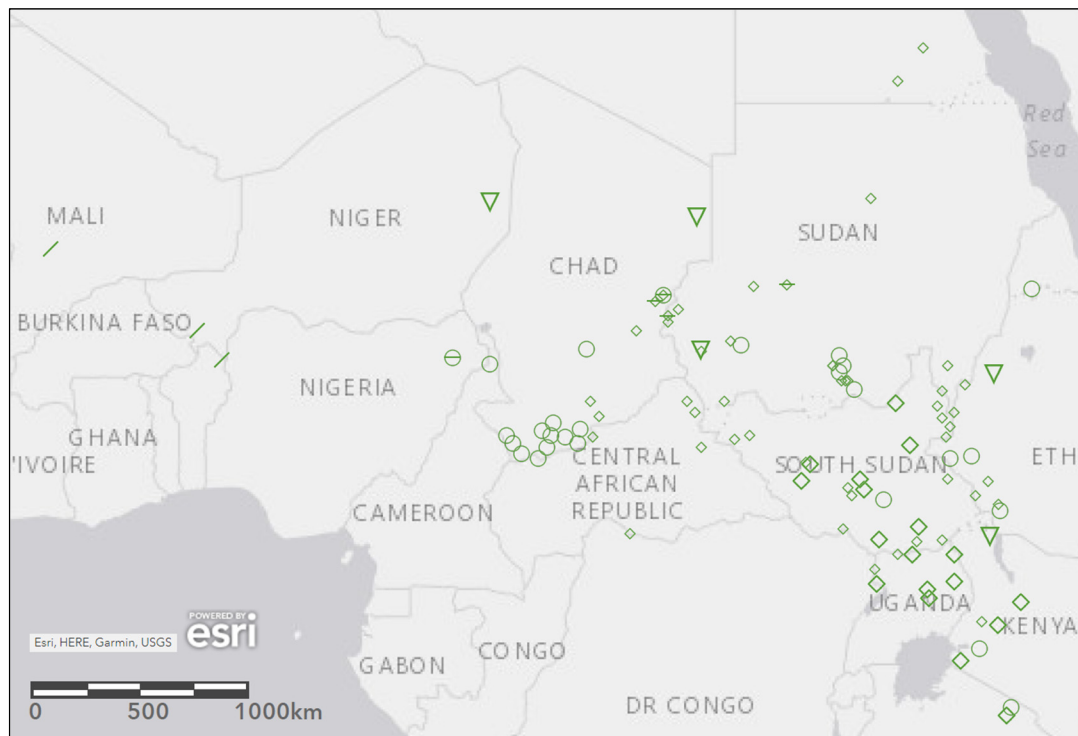


Figure 14.19.1: Systems of 'sibling' terms in Nilo-Saharan.



Figure 14.19.2: Systems of 'sibling' terms in Nilo-Saharan in the Wadai-Darfur region.

## System of ‘sibling’ terms in Niger-Congo

### 1. Classification

This survey examines 50 sample languages from the following sub-branches of the Niger-Congo phylum.

Mande [1]: Bambara; (North-Central)

Atlantic-Congo

North-Central Atlantic [3]: Fula, Noon,  
Wolof

Ijoid [2]: Ijo, Defaka

Volta-Congo

Kwa [3]: Akan, Nzema, Tutrugbu

North VC > Ubangian [2]: Mbum,  
Samba Leko

Benue-Congo

Defoid [1]: Yoruba

Igboid [1]: Igbo

Bantoid

Narrow Bantu [37].

From the sample languages, the following types of sibling systems are identified.

1. Type-A: Undifferentiated sibling type  
e.g. Tutrugbu [Kwa-Ka-Togo]: *adzya* ‘sibling’ (Essegbey 2019)
2. Type-B: Relative age type  
e.g. Noon [North-Central Atlantic; Cangan]: *yaakmun* ‘elder sibling’ vs. *kēmēṅkīmun* ‘younger sibling’ (Soukka 2000)
3. Type-C: Skewed age type  
e.g. Mbum [Cameroun-Ubangian; Adamawa]: *bákà* ‘elder brotehr’ vs. *dàà* ‘elder sister’ vs. *nyìn* ‘younger sibling’ (Hino 1978)
4. Type-E: Sex type (Brother-sister type)

e.g. Eton [Benue-Congo; Bantu A71]: *ndóm* ‘brother’ vs. *kál* ‘sister’ (Van der Velde 2008)

5. Type-F: Relative sex/age type  
e.g. Nkore-Kiga [Benue-Congo; Bantu JE13/14]: *mukulu* ‘elder sibling of the same sex’ vs. *mulumuna* ‘younder sibling of the same sex’ vs. *mushisha* ‘male sibling (for female)’ vs. *mu-ali* ‘female sibling (for male)’ (Taylor 1985).

Note that we classify a language into type F if it is confirmed that ‘relative sex’ should be distinguished in its sibling term system, i.e., this type can further be classified in terms of additional features that are relevant to the configuration of the entire system, e.g., according to Kaji (1985), Tembo [Bantu JD531] does not differentiate (absolute) sex for a sibling with non-identical sex, whereas Nkore-Kiga [Bantu JE13/14] does specify the absolute sex for a sibling with different sex as shown in the above example.

### 2. Geographical distribution and interpretation

Geographical distribution of each type would be summarised as follows (see also Fig. 1–4).

Type-A [5 languages]: As already pointed out by Murdock (1968), this type seems to be well attested in Kwa languages. In our sample, three Kwa languages namely Akan, Nzema, and Tutrugbu, are classified into this type. Others are also distributed in non-Bantu area, including Fulfulde

[Atlantic; Fula] and Igbo [Benue-Congo; Igboid].

Type-B [6 lgs]: This type, labeled as the 'Yoruba type' by Murdock (1968), is attested not only in different varieties of Yoruba [Benue-Congo; Defoid] but also in non-Benue Congo languages including Noon [Atlantic; Cangin] and Bambara [Mande] (cf. Kastenholz 1998), the latter of which, however, is classified as Type-D in Murdock (1968). This group is also exclusively distributed in non-Bantu area with an exception of Nzadi [Benue-Congo; Bantu B865] in our sample.

Type-C [3 lgs]: This type seems exclusively distributed in Adamawan languages including Mbum and Samba Leko. It is also well recognised that Swahili [Benue-Congo; Bantu G42] is classified into this type.

Type-E [3 lgs]: This type is only dispersedly found in our sample. The languages that can be classified in this category in our sample include Kalabari-Ijo

[Ijoid], and two Bantu languages which are extremely distant from each other, namely Eton [Bantu A71] and Zulu [Bantu S42], latter of which is also classified into this group by Murdock (1968). However, it should be noted that this language has developed a set of forms that can distinguish more complicated relations, e.g. *-fana* 'younger brother' (< 'boy'), *-khuluwe* 'elder brother' etc., and thus may be excluded from this category.

Type-F [33 lgs]: This type as defined by a primary distinction of relative sex is quite widespread in Bantu area. This dominant geographical distribution has to be understood in relation to lexical reconstruction of sibling terms in Proto Bantu, where *\*dòmbò* '(his) sister, (her) brother' vs. *\*dògó* 'brother or sister (same sex)' is assumed to express the essential distinction.

(SHINAGAWA Daisuke and KOMORI Junko)

A	Undifferentiated sibling type	○
B	Relative age type	—
C	Skewed age type	▽
E	Sex type (Brother-sister type)	◇
F	Relative sex type	⊕
FB	Relative sex/age type (Relative sex type II)	/

# SYSTEM OF 'SIBLING' TERMS IN NIGER-CONGO

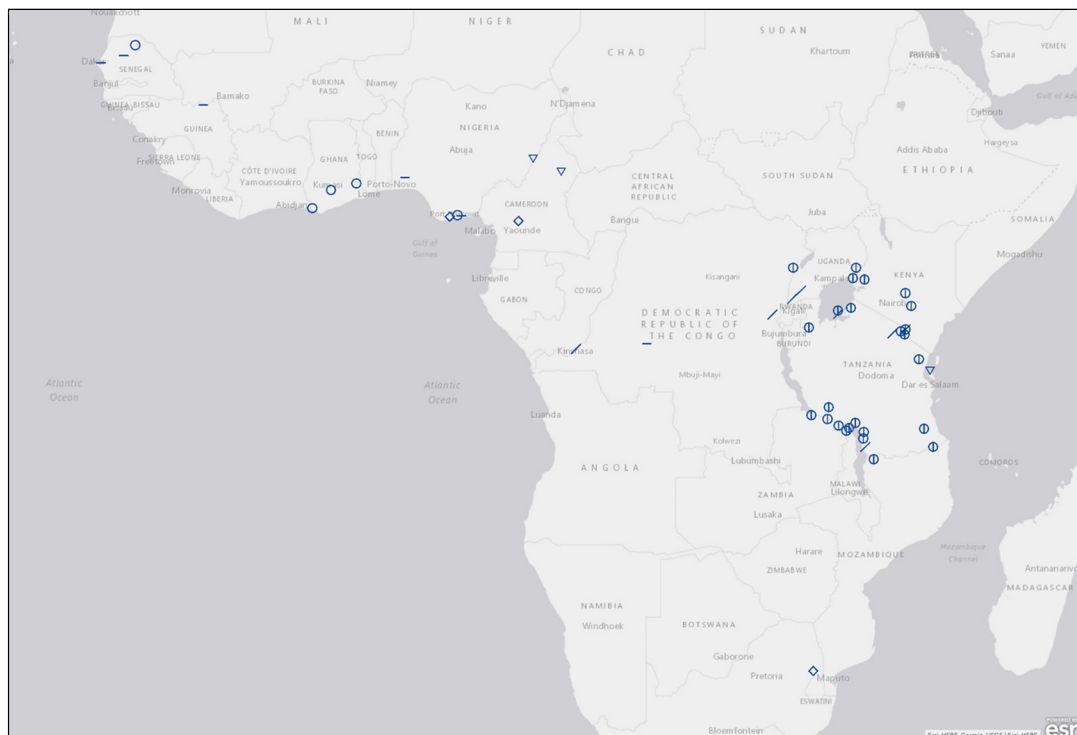


Figure 14.20.1: System of 'sibling' terms in Niger-Congo.

## System of ‘sibling’ terms in the Kalahari Basin Area

As shown in Table 1, five types of sibling systems are attested among the 14 sample languages: 1. the undifferentiated sibling type (A1) in the Khoe-Kwadi family, 2. the relative age type (B2) in the Tuu and Khoe-Kwadi families, and 3. the brother-sister type (E2) in the Tuu family. The other two types, 4. the skewed age type (C3) and 5. the age/sex type (D4), are attested in the Kx’a family.

**Table 1: Sibling types in KBA languages**

Family	Branch	Language	Type
Tuu	!Ui	Nlɪŋg	E2
	Taa	W. !Xoon	B2
		E. !Xoon	B2
Kx’a	Ju	Ts. Jul’hoan	C3
		W. !Xuun	D4
		E. !Xuun	D4
Khoe-Kwadi	Kalahari-Khoe	Ts’ixa	B2(A1)
		Tshila	B2(A1)
		Gllana	B2(A1)
		Glui (Xade)	B2(A1)
		Glui (Khute)	B2(A1)
		†Haba	B2
	Naro	B2	
Khoekhoe	Khoekhoe	A1	

In the Tuu family, Nlɪŋg of the !Ui branch adopts Type E2, while the other two languages of the Taa branch share Type B2. Sibling terms attested in the Tuu family are summarized in Table 2 below.

**Table 2: Sibling terms in the Tuu family**

	Elder		Younger	
	M	F	M	F
Nlɪŋg	l̥d̥i	laa-ɣe	l̥d̥i	laa-ɣe
W. !Xoon	oχàà	oχàà	†kχ’z̥j̥	†kχ’z̥j̥
E. !Xoon	oχaa	oχaa	†qχ’an	†qχ’an

**Table 3: Sibling terms in the Kx’a family**

	Elder		Younger	
	M	F	M	F
Ts. Jul’hoan	!óó	!ʔúú	ts <sup>h</sup> ĩĩ	ts <sup>h</sup> ĩĩ
W. !Xuun	loo	lui	ts <sup>h</sup> aŋ	taa-haŋ
E. !Xuun	loo	lui	ts <sup>h</sup> aŋ	taa-haŋ

In the Kx’a family, the use of sibling terms involves both age and sex, as shown in Table 3.

In the Khoe-Kwadi family, the Khoekhoe branch adopts Type A1, as shown in Table 4, while all the samples in the Kalahari-Khoe branch share Type B2. On the other hand, Type A1 is also attested in five Kalahari-Khoe languages (word forms indicating Type A1 are shown in parenthesis): Ts’ixa (*kúú-k’èè*), Tshila (*kóĩ*), Xade and Khute Glui (*òò*), and Glana (*òò*). Thus, Type B2 is mixed with Type A1 in these languages.

**Table 4: Sibling terms in the Khoe-Kwadi family**

	Elder		Younger	
	M	F	M	F
Ts’ixa	táá-xū	táá-xū	dámā-xù	dámā-xù
Tshila	cīā-χō	cīā-χō	dàbā-χō	dàbā-χō
Glana	cīā-χō	cīā-χō	dàbā-χō	dàbā-χō
Glui (Xade)	cīā-χō	cīā-χō	jibā-χō	jibā-χō
Glui (Khute)	cīā-χō	cīā-χō	jibā-χō	jibā-χō
†Haba	kái	kái	!ũĩ	!ũĩ
Naro	kái-k <sup>h</sup> oe	kái-k <sup>h</sup> oe	!ũĩ	!ũĩ
Khoe khoe	(tĩĩ)	(tĩĩ)	(tĩĩ)	(tĩĩ)
	!ãã	!ãã	!ãã	!ãã

(KIMURA Kimihiko, NAKAGAWA Hiroshi)

SYSTEM OF 'SIBLING' TERMS IN THE KALAHARI BASIN AREA

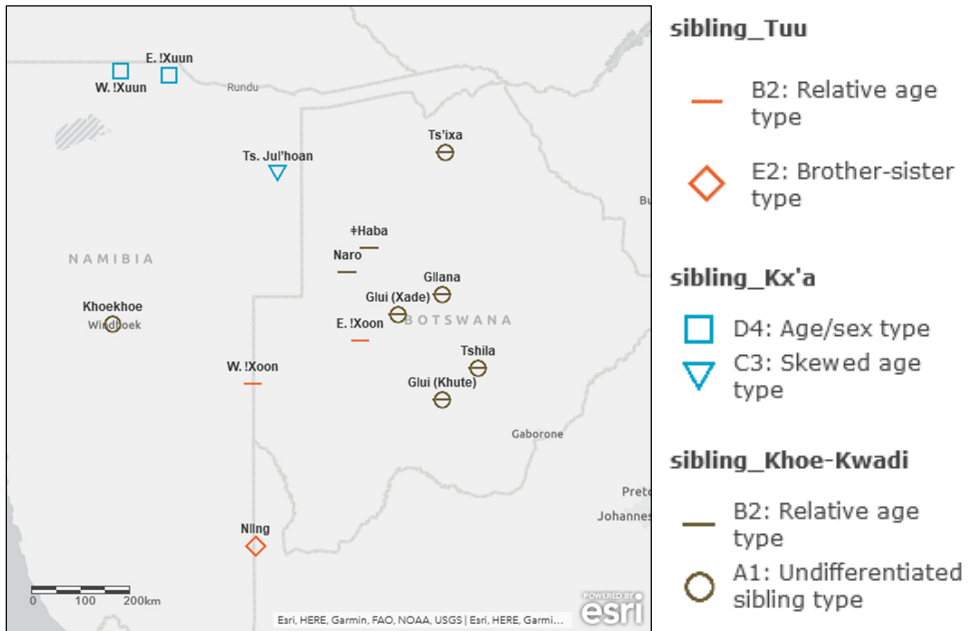


Figure 14.21.1: Geographical distribution of sibling types in KBA





# Chapter XV

## Alignment



## Alignment in Asian and African languages

### 1. Project aims

Languages distinguish the single argument for intransitive verbs (S), the subject for transitive verbs (A), and the object for transitive verbs (P) in varied ways. This project conducted a geolinguistic analysis of the alignment patterns of grammatical relations in Asian and African languages, focusing on highly transitive sentences vis-à-vis intransitive ones.

Typological maps on a similar theme have been created in the project of the World Atlas of Language Structures (Dryer and Haspelmath 2013), including the locus of marking in the clause (#23A by J. Nichols and B. Bickel), the alignment between the case marking of full noun phrases and pronouns (#98A and #99A by B. Comrie), and the configuration of verbal person marking (#100A by A. Siewierska). That work simply illustrates a typical pattern for each language, although the alignment patterns may be split as the result of various factors, such as tense/aspect or noun hierarchy, even within a single language. In addition, no analysis was done with respect to the geographical distribution of the patterns or of their formation process.

Geolinguistics, conversely, as a scholarly subject, does not attend to the whole system of a given language but examines each individual linguistic phenomenon separately (Sibata 1969). In this study, we draw maps focusing on a target of concrete and limited linguistic features to allow us to analyze the linguistic history of the feature. Therefore,

it is first necessary to establish the sentence type of our specific analysis target. The conditions for common-target sentences set for this study are listed below:

- The subject and object are equal in the empathy/animacy/person hierarchy: for example, both are in the third person, or both are animals.
- The subject and object are definite, specific, and/or referential.
- The predicate is simple and/or plain in voice and/or mood.
- The predicate is verbal, with high volitionality and/or affectedness.
- The event described by the sentence has already occurred, is finished, or has been completed in the past.
- The information structure and word order are unmarked or most general.

Thus, ‘The fox killed the snake.’ represents a typical sentence of the type subjected to scrutiny. The abovementioned stipulations were selected with reference to Hopper and Thompson (1980) to ensure the examination of sentences with high transitivity. However, sample sentences that did not strictly meet these conditions were accepted if the contributor could confirm that corresponding distinctions do not affect alignment patterns in the languages under concern.

### 2. Classification criteria

Table 1 presents the major classifications and basic map symbols that are commonly

used during this project. The letters A, S, P, and the slash mark (/) in the title column indicate the subject of a transitive verb, the subject of an intransitive verb, the object of a transitive verb, and the distinction among them, respectively.

Table 1: Major types and symbols.

	Dependent-marking	Head-marking	Double-marking	No marking
AS/P	A1	/ A2	\ A3 ^ AX3	- A4
A/SP	△ B1	▽ B2	▽ B3 ▾ BX3	△ B4
S1/S2	≡ C1	∥ C2	↗ C3 ↘ CX3	↗ C4
A/S/P	∇ D1	□ D2	◇ D3 ⬠ DX3	⬠ D4
ASP	○ E1	○ E2:	⊙ E3 ⊘ EX3	○ E4

Types A–E correspond to the type of alignment: A) nominative–accusative, where A and S are equal but P is distinguished (described as AS/P in Table 1); B) ergative–absolutive, wherein P and S are equal but A is distinguished (A/SP); C) split in S into active–stative (S1/S2); D) tripartite, wherein A, S, and P are all distinguished from each other (A/S/P); and E) neutral, that is, where there are no distinction among A, S, and P (ASP). The numbers following the capitals indicate the loci of marking: 1) dependent-marking or argument flagging, 2) head-marking or argument indexing, 3) double-marking, and 4) none (Nichols 1986, Haspelmath

2013). The notation ‘X’ in double-marking types represents a conflict between dependent- and head-marking patterns in a sentence (e.g., where the case alignment is nominative–accusative, but the verbal morphology shows a hierarchical person marking). E2 denotes that the head-marking morphology does not directly mark grammatical relations, such as hierarchical marking. Languages with no morphological markings (4) may be classified into A4 or E4, depending on the constituent order or other syntactic phenomena.

The splits within common-target type sentences are also addressed. Optional symbols for split patterns are listed below:

- Hierarchy of nouns, including nouns vs. pronouns.
- Lexical properties of verbs.
- Pragmatic features, including the information structure.
- Features of noun phrases.
- Word order.
- Features of the predicate.
- Others.

If more than one type of split was found in the common-target type sentences in a single language, and both types were considered equally major, multiple symbols were stacked on the map. For example, if the pattern according to information structures was split between A1 and A2, the language was classified as A1/A2c and marked with both ‘|’ and ‘—’. However, if more than three split patterns were observed, the language/dialect was classified as F, and a star symbol was inserted to make it more clearly visible.

Moreover, the language could be classified as G if it did not fit any of the abovementioned types. Some features in Asian and African languages could not be categorized within the prescribed framework, such as the symmetrical voice in Austronesian, transitive alignment in Iranian and Nuristani languages in South Asia, and the bidirectional markings of the Songhay languages of Nilo-Saharan. These patterns were thus classified as Type G.

### 3. Geographical distribution and interpretation

The linguistic maps drawn by the contributors of each section reveal the following rough distribution of the types shown in Table 1. (Abbreviations in the list for language groups: AA: Austroasiatic, AN: Austronesian, Cc: Caucasian, CK: Chukotko-Kamchatkan, Ir: Iranian, Jp: Japonic, KB: the Kalahari Basin area, NC: Niger–Congo, NS: Nilo-Saharan, SA: South Asian, TB: Tibeto-Burman.)

- A1** Southern Japanese (Jp), Ryukyuan (Jp), Korean, Sinitic, TB in its southern and central areas, Kra-Dai in China, Sibe (Tungusic), NS in its eastern area, and the languages in Botswana for KB.
- A2** AA in the Indian subcontinent, the Malay peninsula, and Nicobar, the eastern part of SA, Malayalam (Dravidian), Central Kurdish (Ir), Semitic, NS, NC, and Standard Khoekhoe (KB)
- A3** Chukuchi (CK), Tungusic, Uralic, Mongolic, Turkic, the eastern part of SA, Dravidian, Ir, Arabic in the central area (Semitic), and NS.

**AX3** Eastern Uralic, TB in the China–Myanmar border area, and part of the NS languages, i.e., Nyimang and several Nubian languages.

**A4** Northern Japanese (Jp), Sinitic, Baic (TB), Karenic (TB), Hmong-Mien, Kra-Dai, AA in mainland Southeast Asia, Juba and Nubi Arabic (Semitic), NS, NC in its western area, and non-Khoe-Kwadi languages in KBA.

**B1** TB in its northern, western, and central areas, Talysh (Ir), and Nakh (Cc).

**B2** Ormuri (Ir), Abkhazo-Adyghean (Cc)

**B3** The western part of SA, Ir, and Nakho-Daghestanian (Cc).

**BX3** TB in western China, Northwestern Myanmar, and Nepal, the western and northeastern parts of SA, Northern Talysh (Ir), Cc, and Beria (NS).

**C1** Kyushu Japanese (Jp) and Yonaguni (Jp).

**C3** Acehnese (AN).

**CX3** Nepal (SA)

**D1** Kyushu Japanese (Jp), Tamangic (TB), Gochang (TB), and Äiwoo (AN).

**D2** Itelmen (CK).

**D3** Chukuchi (CK) and Koryak (CK).

**DX3** TB in the China–Myanmar border area, the western, northern, and northeastern parts of the SA area, Ir in its eastern area, and Beria (NS).

**E2** Itelmen (CK), Ainu, and Qiangic (TB).

**E4** Western Chinese, TB in its eastern and southern areas, and languages in the Andaman and Sri Lanka islands as well as Nihali in Central India in the SA region.

Other types are found in the Austronesian, South Asian, Iranian, and Nilo-Saharan languages. Complex splits

occur even within the common-target type sentences in certain languages, including Torwali (South Asia) and Northern Lwo (Nilo-Saharan). Please refer to the individual sections for more information on them.

The geographical distribution exhibited the following tendencies:

Types A (AS/P, nominative–accusative) and B (A/SP, ergative–absolutive) are widespread, but their distribution patterns differ. Type A is the most widespread across all of Asia and Africa, including the peripheral areas. In particular, A4 (neutral marking but syntactically nominative–accusative) tends to be distributed across the Eastern and Western peripheral regions of the Asia–Africa continuum. Here, the East is represented by the Sinitic, Kra-Dai, Eastern parts of Austroasiatic, and northern parts of Japonic; the West encompasses the western regions of the Nilo-Saharan and Niger–Congo as well as the Kalahari Basin area. Conversely, Type B exhibits a continuous distribution across parts of Asia: the Himalayas, the western part of the Indian subcontinent, the northern regions of the Middle East, and the Caucasian area. Beria, a Nilo-Saharan language, shows an enclaved distribution. Furthermore, most person markings on verbs are nominative–accusative in pattern (Types A2 and A3). Verbal person markings in the ergative–absolutive pattern

(Types B2 and B3) are found in limited and continuous regions: the western part of South Asia, the Iranian Plateau, and the Caucasus. This geographical distribution may suggest that Type A is older than Type B and that, among its subtypes, A4 is the oldest.

The other types show relatively limited distribution. Type C (S1/S2, split of S across active and inactive) is rare under the condition of this project. It showed only sporadic distribution in Asia and was not attested in Africa. Type D (A/S/P, tripartite) is sporadically found in a few languages in the Chukotko-Kamchatkan, Japonic, Tibeto-Burman, Austronesian, South Asian, and Iranian languages. The Beria language (Nilo-Saharan) is here in an enclave again. Among the subtypes of Type D, DX3 is regarded as an areal feature, as it shows continuous distribution in and around the northern parts of the Indian subcontinent. D2 and D3 are limited to the Chukotko-Kamchatkan languages. Type E2 is limited to the northeastern peripherals and a few Tibeto-Burman languages. Type E4 is found only in a part of the Tibeto-Burman area, South Asian islands, and a few Chinese dialects that have experienced language contact with the others.

(SHIRAI Satoko)

## Alignment in Chukotko-Kamchatkan

Chukotko-Kamchatkan (Chukchi, Kerek, Koryak, Alutor, and Itelmen) is divided into two subgroups: Northern (Chukotko-Koryak: Chukchi, Kerek, Koryak, Alutor) and Southern (Itelmen).

Chukotko-Koryak languages have a lot of common features in terms of phonology, morphology, lexicon and syntax, while those of Itelmen are quite different.

### 1. ASP marking in Chukotko-Kamchatkan

ASP markings in Chukotko-Kamchatkan languages are quite complicated; therefore we discuss only cases in standard verb-predicative sentences.

Chukotko-Kamchatkan languages have the split type in ASP marking (based on data in Skorik (1977), Zhukova (1967), Kurebito (2020), and Ono (2021)).

Chukchi:

AS/P (Nominative-accusative type) in 1SG, 2SG, and 3SG

ASP (Neutral type) in 1PL

A/SP (Ergative-absolutive type) in 2PL

A/S/P in 3PL.

Koryak (Kurebito 2020):

AS/P in 1SG, 2SG, 1DU, 1PL;

A/S/P in 3SG, 3DU, and 3PL

A/SP in 2DU and 2PL

Itelmen:

A/S/P in 1SG, 2SG, 1PL, and 3PL

ASP in 3SG and 3PL

A summary of ASP marking is presented in Table 1.

Table 1: ASP Marking in Chukotko-Kamchatkan

	AS/P	A/SP	A/S/P	ASP
<b>Chukchi</b>	○	○	○	○
<b>Koryak</b>	○	○	○	×
<b>Itelmen</b>	×	×	○	○

Chukchi and Koryak have the ergative-absolutive case marking in noun, while Itelmen case marking is the neutral type, namely, ASP noun has a same case.

#### (1) Chukchi (Skorik 1977)

- a. *ənan ətli Ø-lʔu-ninet.*  
3SG.ERG 3PL.ABS 3SG.A-see-3SG.A>3PL.P  
'He/She saw them.'
- b. *əryənan ətʔon ne-lʔu-yʔen.*  
3PL.ERG 3SG.ABS 3PL.A-see-3PL.A>3SG.P  
'They saw him.'
- c. *ətʔon Ø-kətyəntat-yʔe.*  
3SG.ABS 3SG.S-run-3SG  
'He/She ran.'

#### (2) Koryak (Zhukova 1967, 1972)

- a. *ənan ənno uʃen-nin.*  
3SG.ERG SG.ABS wait for-3SG.A>3SG.P  
'He/She was waiting for him/her.'
- b. *əčyənan ənno n-uʃet-ə-n.*  
3PL.ERG 3SG.ABS INV-wait for-E-3SG.P  
'They were waiting for him/her.'
- c. *(ənno) qut-ti.*  
3SG.ABS get up-3SG.S  
'He/She got up.'

#### (3) Itelmen (Ono 2021)

- a. *na isx Ø-əl'čku-nin.*  
3SG.ABS father.ABS 3SG.A-see-3SG.A>SG.P  
'He/She saw (his/her) father.'
- b. *itχ na n-əl'čku-nin.*  
3PL.ABS 3SG.ABS 3PL.A-see-3PL.A>3SG.P

ALIGNMENT IN CHUKOTKO-KAMCHATKAN

- ‘They saw him.’  
 c. *na*      *Ø-k’ot-in*.  
 3SG.ABS 3SG.S-come-3SG.S  
 ‘He/She came.’

A simplified summary is presented in Table 2.

**2. Geographical distribution**

See Figure 15.1.1.

Table 2: ASP and Marking type in Chukotko-Kamchatkan

Language	ASP (in 3rd person)	Marking type	Symbol
<b>Chukchi</b>	AS/P, A/S/P	Double-marking	\ A3 ◇ D3
<b>Koryak</b>	A/S/P	Double-marking	◇ D3
<b>Itelmen</b>	A/S/P, ASP	Head-marking	□ D2, 0 E2

**Abbreviations**

1, 2, 3: person, A: agent, ABS: absolutive, DU: dual, E: epenthesis, ERG: ergative, INV: inverse, P: patient, PL: plural, S: subject, SG: singular.

(ONO Chikako)



Figure 15.1.1: Alignment in Chukotko-Kamchatkan.



## Alignment in Ainu

### 1. Classification

Ainu has SOV constituent order and no case marking of nouns and pronouns for S (intransitive subject), A (transitive subject), and P (transitive object). Arguments for obliques such as locatives, allatives, and ablatives are marked by postpositions. Moreover, Ainu is a so-called pro-drop language, since personal pronouns are uninflected and often omitted in subject (A/S) and object (P) positions (Bugaeva 2012; cf. Kindaichi & Chiri 1936; Refsing 1986; Shibatani 1990).

Personal verb affixes act as an obligatory index within the verb conjugation, constituting “verbal cross-reference marking” (Bugaeva 2012: 472; Table 1). 3SG/PL indexing involves not only zero-marking on a verb, but also no case marking of arguments. Word order is known to be relatively flexible (cf. Tamura 2000).

(1) a. *ekasi huci ∅-∅-nukar*  
 grandfather grandmother 3.A-3.P-see  
 ‘Grandfather see(/saw) grandmother.’  
 (Tamura 2000: 42)

b. *poyson ∅-cis*  
 small\_child 3.S-cry  
 ‘The small child cry(/cried).’  
 (Tamura 2000: 26)

The Ainu language has ordinarily been classified as having “a mixed (but basically

tripartite) alignment” (Bugaeva 2012: 461; cf. Okuda 2015). However, here Ainu is classified as Type E2a, because the 3SG/PL zero-marking is defined as the ASP neutral and hierarchically head-marking type.

Table 1: Personal verb affixes in Ainu

Grammatical Person	A	S	P
1SG	<i>ku-</i>		<i>en-</i>
1PL.exclusive	<i>ci-</i>	<i>-as</i>	<i>un-</i>
1PL.inclusive (Hokkaido dialect)	<i>a(n)-</i>	<i>-an</i>	<i>i-</i>
1PL (Sakhalin dialect)			
Indefinite			
2SG	<i>e-</i>		
2PL	<i>eci-</i>		
2PL (Hokkaido dialect of Asahikawa)	<i>es-</i>		
3SG/PL	$\emptyset$		

### 2. Geographical distribution

See Figure 15.2.1.

#### Abbreviations

3: 3<sup>rd</sup> person, A: transitive subject, P: transitive object, S: intransitive subject, SG: singular, and PL: plural.

(FUKAZAWA Mika)

ALIGNMENT IN AINU

0 E2a

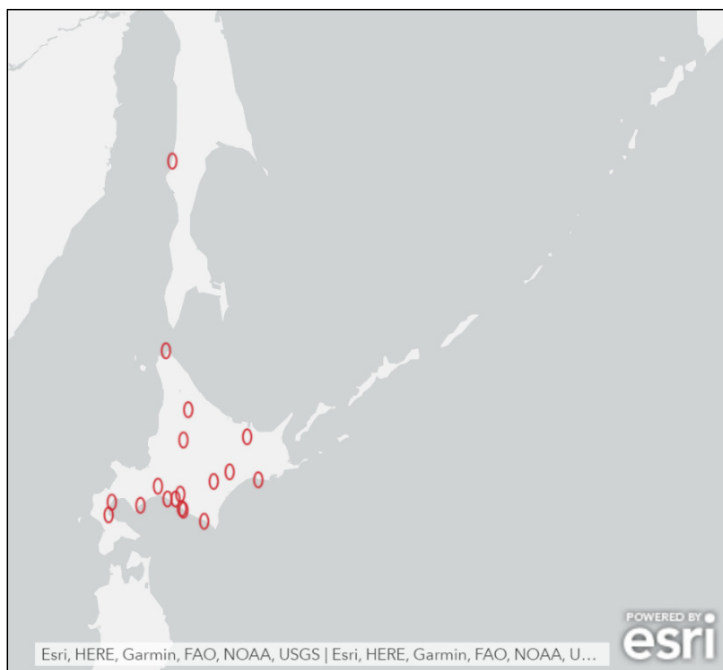


Figure 15.2.1: Alignment in Ainu.

## Alignment in Japonic

### 1. Classification

In the maps, the synchronic types of grammatical relations in Japonic (Japanese and Ryukyuan) are classified into four major categories:

A1: **A**/**S**/**P**; nominative-accusative marking

A4: **A**/**S**/**P**; no marking but word order

C1: **S**1/**S**2; split intransitivity

D1: **A**/**S**/**P**; tripartite alignment

In addition, subcategories are recognized under A1 and A4, and mixed types are also found.

Since Japonic languages are agglutinative, particles are usually used for case marking.

- (1) *aicu=ga bīru=o reizōko=kara*  
that.guy=NOM beer=ACC refrigerator=ABL  
*toridasita*  
took.out  
'That guy took out beer from the  
refrigerator.'

<Tokyo, Shimoji 2018: 92>

For A1 and A4, we created subcategories based on (a) whether or not the relevant forms to mark grammatical relations exist and (b) whether or not the forms drop in natural discourse. For (b), we used data from the Corpus of Japanese Dialects (COJADS) of the National Institute for Japanese Language and Linguistics (NINJAL), which contains transcriptions of approximately 4,000 hours of dialectal discourse from over 200 locations throughout Japan.

The subcategories for A1 are as follows:

A1-1: Both nominative (NOM) and accusative (ACC) forms exist, and the frequency of both occurring simultaneously is 50% or more.

A1-2: Both NOM and ACC forms exist, but the frequency of the ACC is less than 50%.

A1-3: The NOM form exists, but the ACC does not.

The subcategories for A4 are as follows:

A4-1: Both NOM and ACC forms exist, but the frequency of both occurring simultaneously is less than 50%.

A4-2: Both of NOM and ACC forms do not exist.

Moreover, the map includes markings with diacritic symbols for “animacy,” “definiteness,” and “honorific” that are related to grammatical relations: animacy is marked with “a,” definiteness with “d,” and honorifics with “h”.

### 2. Geographical distribution and interpretation

In the mainland Japan, there are five types of case marking: A1-1, A1-2, A4-1, C1, and D1.

The languages and dialects that belong to each type are shown in Figures 15.3.1, 15.3.2, and 15.3.3. We will show example sentences of each type by giving typical points.

Hiroshima dialect is A1-1 type. In this dialect, **A** and **S** are marked by =*ga*, and **P** is marked by \*=*o*.

- (2) a. *o-zii-san=ga* [...] *hanasi*  
 HON-old.man-HON=NOM [...] chat  
*taaraa* (< \**taara=o*) *an-de*  
 straw.bag.ACC knit-GER  
 ‘the old man knitted a straw bag’
- b. *hurue=nnjaa bonkura=ga*  
 Furue=LOC.TOP sodden.person=NOM  
*or-an*  
 be-NEG  
 ‘there is no sodden person in Furue’  
 <Hiroshima city, COJADS>

Ōsaka dialect is A1-2 type. In this dialect, **A** and **S** are marked by =*ŋa*, and **P** is usually with no marking.

- (3) a. *kanai=ŋa* [...] *hanasi*  
 wife=NOM [...] chat  
*si-ta=N=ja=kedo*  
 do-PST=NMLZ=COP=CNC  
 ‘my wife had a chat’
- b. *bantoo=ŋa*  
 head.clerk=NOM  
*suwat-te-masi-ta-desu=wa*  
 sit-GER-POL-PST-POL=SFP  
 ‘the head clerk was sitting’  
 <Osaka city, COJADS>

Toyama dialect in Hokuriku is A4-1 type. In this dialect, **A**, **S**, and **P** are usually not marked morphologically but marked by word order.

- (4) a. *ora toru=no taberu-joo-na*  
 ISG chicken=GEN eat-SEEM-ADN  
 thing eat-PST  
*mon tabe-ta*  
 ‘I ate something like chickens eat’
- b. *mata aŋat-te kuru mon*  
 again go.up-GER come person  
*ot-te*  
 be-GER  
 ‘there was a person who came up again’  
 <Tonami city, COJADS>

Tsugaru dialect in Tōhoku is the type of A4-1d. In this dialect, **A**, **S** and **P** are usually

not marked morphologically but marked by word order. However, when **P** is high in specificity, like proprietary noun or demonstratives, **P** is marked by =*goto*.

- (5) a. *ano zu-sama taego-ko*  
 that old.man-HON drum-DIM  
*tadage-ba*  
 beat-COND  
 ‘when that old man beats a drum’
- b. *ameuri ki-ta=on*  
 candy.seller come-PST=SFP  
 ‘the candy seller has come, right’
- c. *soe=goto orando ko su-te*  
 that=ACC 1PL this.way do-GER  
*nameru=N=daa*  
 lick=NMLZ=COP  
 ‘we lick it (= the candy) this way’  
 <Hirosaki city, COJADS>

Shiiba dialect in Miyazaki is C1 type. In this dialect, **A** is marked with =*ga*, **P** is not usually morphologically marked. **S** is divided into **S**1 and **S**2 by agentivity. **S**1 is always marked with =*ga* and **S**2 is marked with =*no* or =*ga*. When the agentivity of **S** is high, **S** takes =*ga*, and when it is low, it takes =*no* as well.

- (6) a. *anoko=ga awee huku*  
 that.child=NOM blue clothes  
*ki-tor-u*  
 wear-RES-NPST  
 ‘That child is wearing blue clothes.’
- b. *onago=ga tat-tor-u*  
 woman=NOM stand-RES-NPST  
 ‘A woman is standing.’
- c. *akjaa hana=no*  
 red flower=NOM  
*sjaa-tot-ta=nee*  
 bloom-RES-PST=SFP  
 ‘Red flowers were in bloom, weren’t they.’  
 (Shiiba-son Hōgen Goishū Henshū iinkai 2022)

Hakata dialect in Fukuoka is A1/D1 type. In this dialect, when the subject is a first-person or second-person pronoun, **A** and **S**

are marked with =*ga*, and **P** is marked with =*ba*. However, when the subject is not a proper noun nor a kinship noun nor a pronoun, **A** is marked with =*ga* and **S** is usually marked with =*no*.

- (7) a. *omae=ga ore=N=to=ba*  
 2SG=NOM 1SG=GEN=NMLZ=ACC  
*tabe-taroo=ga*  
 eat-PST.INFR=SFP  
 ‘You would have eaten mine.’
- b. *omae=ga taore-ru=bai*  
 2SG=NOM get.sick-NPST=SFP  
 ‘you will get sick’
- c. *gokiburi=ba kodomo=ga*  
 cockroach=ACC child=NOM  
*jaccuke-ta*  
 beat-PST  
 ‘The child beat the cockroach.’
- d. *warusoo{=no/=ga} or-u*  
 bad.child=NOM be-NPST  
 ‘There is a naughty kid.’  
 <Hakata, Sakai 2022>

In the Koshiki-jima Teuchi dialect, **A** and **S** are generally marked with =*ga*, and **P** is marked with =*ba*, however when the subject is a respected person, **A** is marked with =*ga*, and **S** is marked with =*ga* or =*no*.

- (8) a. *omai{=ga/=no} kokee*  
 2SG.HON=NOM here.LOC  
*suwat-ta=naa*  
 sit.down-PST=SFP  
 ‘You sat here.’
- b. *kokee wai=ga*  
 here.LOC 2SG=NOM  
*suwat-tajoo=ga*  
 sit.down-PST.INFR=SFP  
 ‘You would have sat here.’  
 <Teuchi, Sakai 2019>

In Ryukyuan languages, there are six types of case marking for grammatical relations: A1-1, A1-2, A1-3, A4-1, A4-2, and C1. In some of the dialects and

languages, animacy has an effect on case alignment.

A1 type languages are widely distributed on the Ryukyu Islands. Of these, A1-3 (marked nominative type) is distributed from Yoro Island to Naha on Okinawa Island, and A1-1 is distributed around the A1-3 regions. The westernmost Yonaguni is C1 type. A4 type is distributed in Yaeyama with A4-1 type in Iriomote-Sonai, and A4-2 type in Hateruma, which has no morphological markers.

Okinoerabu in south Amami is A1-3a type. In this language, **A** and **S** are marked by =*ga* or =*nu* depending on the position in the animacy hierarchy (Dixon 1979: 85): nouns that are located in a higher position in the hierarchy are marked by =*ga*, and nouns in a lower position are marked by =*nu*. **P** is not marked morphologically.

- (9) a. *wa=ga ura mic-ju-n*  
 1SG=NOM 2SG see-NPST-IND  
 ‘I see you.’
- b. *wa=ga ic-ju-n*  
 1SG=NOM go-NPST-IND  
 ‘I go (there).’
- c. *?maa=nu ic-ju-n*  
 horse=NOM go-NPST-IND  
 ‘(The) horse goes (there).’

This marked nominative type is known to be very rare, with only 6 languages reported on the WALS maps. However, it is relatively common in Ryukyus.

Hateruma dialect in Yaeyama is A4-2 type, which is with (almost) no marking of the distinction between **AS** and **P**. In this language, **A**, **S**, and **P** are not marked morphologically but marked by word order.

- (10) a. *baa nuf-u-n*  
 1SG sleep-NPST-IND

- ‘I sleep.’
- b. *baa*      *sumuci*      *jum-u-n*  
 1SG      book      read-NPST-IND  
 ‘I read a book.’
- c. *tun*      *butu*  
 wife      husband  
*tum-a-n*  
 look.for-DUR.NPST-IND  
 ‘(The) wife is looking for (the) husband.’  
 (Aso 2020: 109, 111)

We assume that A1-1 type is the oldest type in history since it is widely distributed in both mainland Japan and Ryukyus, from Tohoku to Southern Ryukyus.

The marked nominative types (A1-2 and A1-3), which are typologically rare, are considered to be the result of the decrease and disappearance of ACC marking. In the A4-1 and A4-2 types, not only the ACC case marking but also the NOM case marking became less frequent and disappeared.

Since the A4 types are distributed in the outermost part of Japonic, that is, Tohoku and Yaeyama, they seem to be the oldest at first glance. In addition, the case marker was not developed in ancient Japanese, it is possible that the proto system is retained in these areas. However, since types that have case markers are distributed in the neighborhood of A4 and there are traces that the language of A4 once had case markers, it is presumed that the present A4 types are developed from A1 types.

The C1 types are considered to have developed from the A1 type in parallel. The C1 type in Kyushu marks NOM by =*ga* or =*no* depending on the agentivity. This type seems to be the retention of Old Japanese system. Similarly, most of the C1 types of Ryukyus (northern Ryukyus and Yonaguni) are considered to be the result of the reduction and loss of =*nu* (< \*=*no*), which

marks **Sp** (non-agentive **S**). Like the C1 type, the D1 type is a system in which **A** is marked with =*ga* and **S** is marked with =*no* depending on the agentivity and the position in the animacy hierarchy. C1 in the Miyako-Tarama dialect has an inactive marker =*ba* (Celik and Hayashi 2017), which originally marks ACC but now also marks **Sp**. In Hachijo dialect and Old Japanese, there are examples of **Sp** marked with an ACC particle. The C1 type of Awaji is developed from A1-2 by omitting the NOM case marking from **Sp**. Since marked nominative types do not have ACC markers, the case omission in **Sp** is the result of merger with **P**.

The animacy hierarchy is used as a criterion for the usage of NOM markers =*ga* and =*no*; if the animacy of a NOM is high in the hierarchy, it is marked with =*ga*, and =*no* is used if it is low. This difference developed from that of agentivity since they are strongly related: a noun that is more animate tends to be an agent, and a noun that is less animate tends to be a patient. Definiteness concerns ACC markers, which is known as differential object marking (DOM) such as =*goto* in Tohoku-Tsugaru (see 5c), and it is considered to be an innovation in these areas. Honorific is related to the proper usage of the NOM markers =*ga* and =*no*. This is developed in relation to agentivity, since weakening agentivity shows honor to nominatives.

In addition to the marking with/without particles, contracted forms and lengthened forms are also observed in case marking (see 2a). It is considered that the markings with no particles are derived from contracted forms through lengthened forms, rather than particles being merely omitted.

- (11) a. *kore=wo* ‘this=ACC’ > *kore-u* > *korjo:* >  
*kore:* > *kore*  
 b. *kore=ga* ‘this=NOM’ > *kore-ā* > *korjā:* >  
*kore:* > *kore*  
 c. *kore=no* ‘this=NOM’ > *kore-n* > *korē:* >  
*kore:* > *kore*  
 d. *kore=woba* ‘this=ACC.TOP’ > *kore-uba* >  
*korjo:ba* > *kore:ba* > *koreba*

Marked nominative alignment seems to be the result of diachronic sound changes. Since the ACC case marker =*wo* was developed earlier than NOM case markers, the change in (11a) also occurred earlier and became the zero form. The particle =*ba* probably came from =*woba*. The sound /wo/ was fused in a process like (11d), leaving only =*ba*.

In Old Japanese, case marking is not obligatory, and particles =*ga* and =*no* are originally genitive markers. The ACC marker =*wo* developed from the interjectory particle, which seems to mark

the inactive case. Later, the genitive in the attributive clause was recognized as the NOM, and then the NOM case markers emerged.

### Abbreviations

1: first person, 2: second person, ABL: ablative, ACC: accusative, ADN: adnominal, CNC: concessive, COND: conditional, COP: copula, DIM: diminutive, DUR: durative, GEN: genitive, GER: gerundive, HON: honorific, IND: indicative, INFR: inferential, LOC: locative, NMLZ: nominalizer, NOM: nominative, NPST: non-past, PL: plural, POL: polite, PST: past, RES: resultative, RLS: realis, SEEM: seeming, SFP: sentence-final particle, SG: singular, TOP: topic

(KIBE Nobuko, NAKAZAWA Kohei, and YOKOYAMA Akiko)

### types

- | A1-1
- || A1-2
- ||| A1-3
- A4-1
- = A4-2
- C1
- ▽ D1

### subcategory

- a
- d
- ◀ h

ALIGNMENT IN JAPONIC

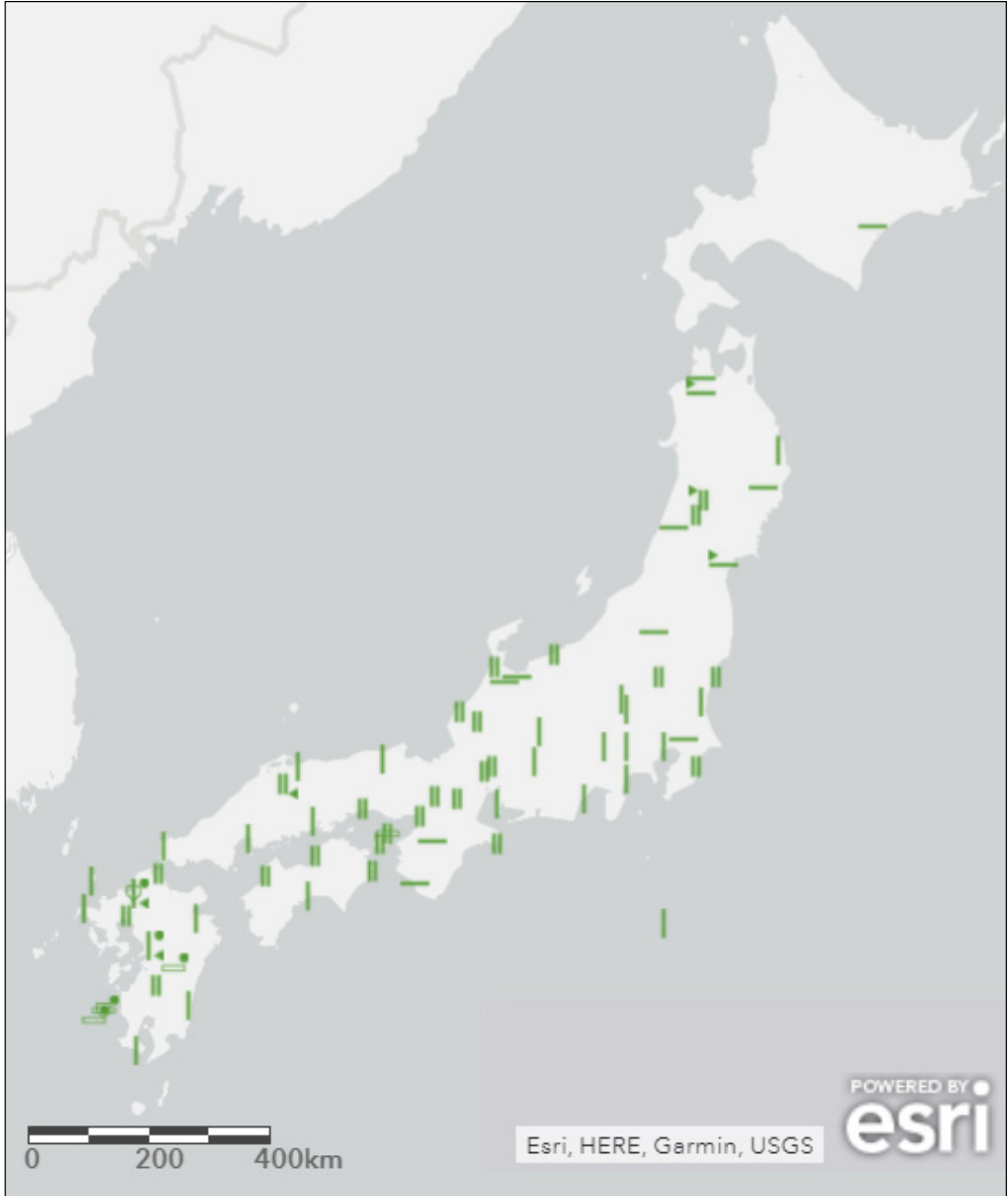


Figure 15.3.1: Alignment in mainland Japan.



ALIGNMENT IN JAPONIC

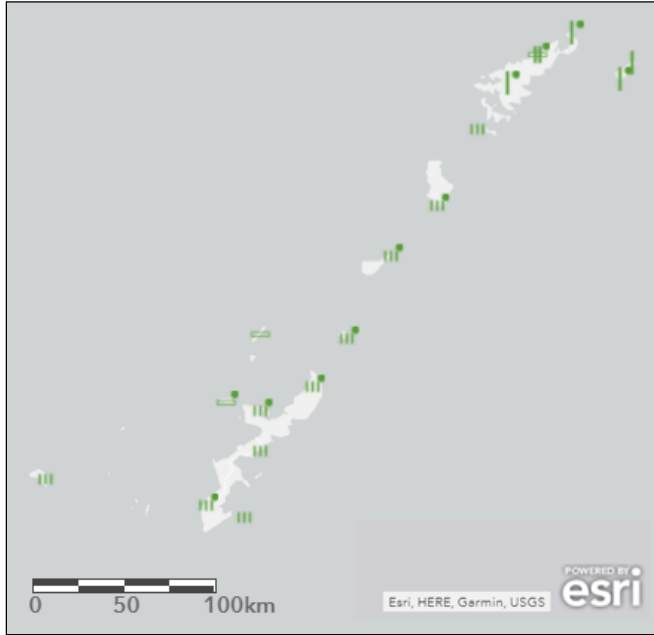


Figure 15.3.2: Alignment in Northern Ryukyu Islands.

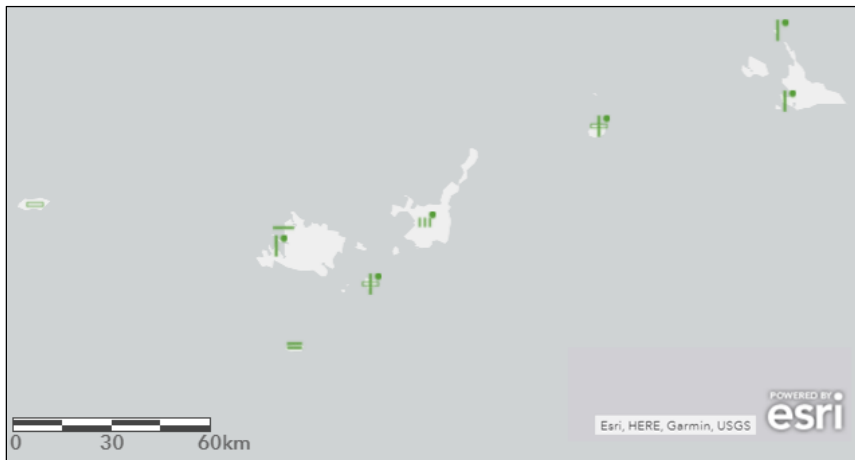


Figure 15.3.3: Alignment in Southern Ryukyu Islands.

## Alignment in Korean

### 1. Classification

The Korean language has the following characteristics regarding grammatical relations.

Morphology: agglutinative

Basic word order: SOV

Cases-marker: postposition

Locus of marking: dependent-marking

Alignment pattern: AS/P

Therefore the basic type of this language is A1 according to the framework of this project.

However, there are some problems. In colloquial speech, case-markers are often not used and the conditions on the use and non-use of case-markers are complex (for example, Kim Jihyun 2016).

Kazama (2015) argued that in colloquial Japanese case-markers are not used frequently and the distinction of the grammatical person often depends on the kinds and structure of the predicate so that the colloquial Japanese tends to be a head-marking language. The situation is quite similar in the case of the Korean colloquial language although the conditions are not the same.

In this respect, Middle Korean is interesting because it had the so-called volitive prefinal ending ‘-o/u-’ (‘-wo/wu-’ in Yale Romanization) which has been also called the first person marker according to some researchers. Examples are the following:

- (1) i      toŋsan-AR      p<sup>h</sup>AR-o-ri-ra  
this garden-ACC      sell-O-FUT-DEC  
“I will sell this garden.”  
<1447 稊譜詳節6:24b>

- (2) na-spun      jonh-o-ra      ha-si-mye  
I-only      honored-O-DEC      say-HON-CONV  
“Only I am honored”. (唯我独尊)  
<1447 稊譜詳節6:17a>

If we treat this ‘-o-’ as the first person marker then this language might be classified as the A3 type.

Lee and Ramsey (2011) describe this prefinal ending as follows:

The “volitive” –wo/wu- (called the modulator in Martin 1992) was a complex morpheme known only from Middle Korean. Its meaning is enigmatic and its phonological shape varied. (p. 205)

The meaning of the volitive morpheme is difficult to delineate with any precision. However, it seems to have been used for actions (or states) that were of subjective will or intent, not for factual, objective narrative. (p. 206)

It seems difficult to maintain the first person marker theory because there are apparent counter examples. However, it still has something to do with the restrictions on the selection of the grammatical person and number in a predicate structure.

Recently, Kawasaki (2017) noted that the prefinal ending ‘-o/u-’ functions as a kind

of specifier when used adnominally, hinting at a connection to the notion of plurality in that it is used for a uniquely specifiable thing and not used in many other unspecifiable cases (p. 35). He further suggested that this might be the original meaning in the case of the predicate usage.

## 2. Geographical distribution and interpretation

As to the basic grammatical relations, there is no geographical differences in Korean dialects.

### Abbreviations

ACC: accusative, CONV: converb, DEC: declarative, FUT: future, HON: honorific.

(FUKUI Rei)

A1

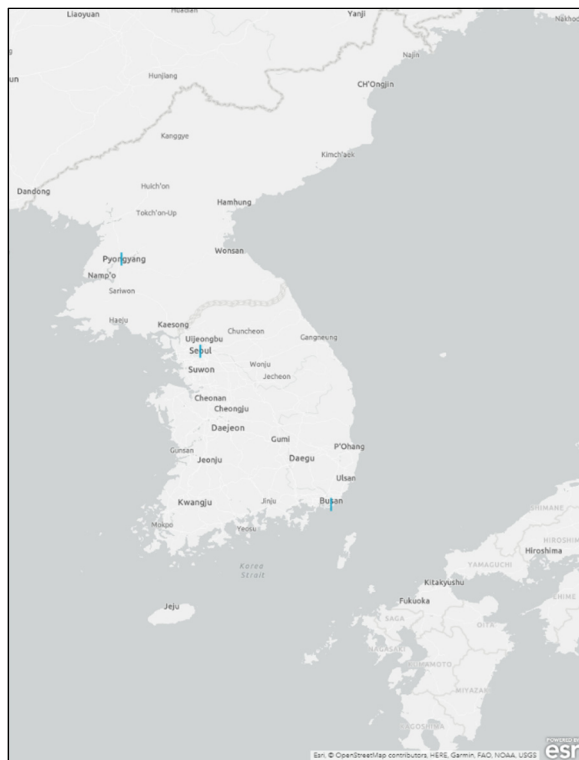


Figure 15.4.1: Alignment in Korean.

## Alignment in Sinitic

### 1. Classification

Most Sinitic languages are classified under the A4 (No-marking, AS/P) type. The subject of a transitive verb (A) and an intransitive verb (S) can be placed at the beginning of a sentence, while the object of a transitive verb (P) follows the transitive verb. Examples from standard Chinese are as follows:

小李 走 了。

Xiao-Li go PRF

‘Xiao-Li is gone.’

小张 打 伤 了 小李 了。

Xiao-Zhang hit injured Xiao-Li PRF

‘Xiao-Zhang hurt Xiao-Li.’

Some dialects use both SVO and SOV, for which the symbols of the A4 (No-marking, AS/P, SVO) and E4 (No-marking, ASP, SOV) types overlap for convenience.

The object of a transitive verb is also shifted to precede the transitive verb through the *ba* 把 construction, which typically means “disposal.”

张三 把 李四 打 跑 了。

Zhang-san OBJ Li-si beat away PRF

‘Zhang-san beat Li-si away.’

The actual behavior of the *ba* construction varies widely. Therefore, we consider only whether the dialects possess the *ba* construction and overlook the conditions of usage. The markers of the *ba* construction are usually prepositional, classified under A1-1 (Dependent-marking,

AS/P), but sometimes are postpositive as well, classified as A1-2.

### 2. Geographical distribution and interpretation

Grammatical relations in Sinitic languages show an anonymous distribution of A4 type, while the A1-1 type is observed in most Chinese dialects. The “+” symbols in the map indicate that the dialect adopts the SVO order and has the *ba* construction. However, *ba* is not always a typical marker of a prepositional object. In standard Chinese, the *ba* construction has certain structural restrictions: The verbal component needs to carry other components and cannot be a sole verb; the postpositive nominal component needs to be definite. Further, the object can sometimes follow the verb (Lü 1965).

他 把 橘子 剥 了 皮。

3SG OBJ orange v.peel PRF n.peel

‘He peeled the oranges.’

This type of *ba* construction is observed over a large area, especially in northern China, while some dialects show unique developments.

For instance, in some dialects of northwest China, *ba* is a marker of a prepositional object and does not express disposal.

我 把 他们 的 话 知道。

1SG OBJ 3PL GEN word know

‘I know what they say.’

(Gansu Lanzhou 兰州 dialect, Huang 1996)

The *ba* construction varies in function, marker, and sentence type. In some dialects, *ba* serves as both a disposal marker and other markers, such as passive. Some dialects use other markers derived from verbs such as taking (*na* 拿), giving (*gei* 给, *bi* 界), or helping (*bang* 帮). In some dialects, the markers can be omitted (Li and Chappell 2013).

In the Gansu Linxia 临夏 dialect, the object usually occurs before the transitive verb (SOV) except in copular sentences using *shi* 是. To distinguish subject and object, *ha* 哈 often follows the object, especially when personal pronouns are used (Wang 1993).

我 他 哈 叫 来 了。  
1SG 3SG OBJ call come PRF  
'I called him.'

我 哈 他 叫 来 了。  
1SG OBJ 3SG call come PRF  
'He called me.'

With the spread of standard Chinese, the “*ba* + O + *ha*” construction later appeared in the Linxia dialect.

我 把 我 的 亲 人 哈 想  
1SG OBJ 1SG GEN n.relative OBJ miss  
者。  
MOD  
'I miss my relatives.'

It has been pointed out that contact with Altaic or Tibeto-Burman languages has led northwest dialects to develop the marker of a prepositional object. Based on conditions in the Linxia dialect, Li and Chappell (2013) further argued that through strong language contact, SOV languages such as Mongolian, Turkish, and Tibetan directly influenced the development of the “O + *ha* 哈” construction and the replacement of the *ba* construction.

The “O + *shang* 上” construction is seen in Shangri-La 香格里拉 Mandarin dialect. This is also due to intense contact with SOV languages (Zhou 2016).

狼 狗 上 咬 死 喽。  
wolf dog OBJ bite dead PRF  
'The wolf bit a dog to death.'

The “-” symbols in the map, indicating dialects that lack the *ba* construction, show a scattered distribution in the Guangdong and Guangxi provinces. The southern dialects tend to use a basic SVO order for disposal sentences, and the *ba* construction can be used only under limited conditions.

### Abbreviations

1: first person, 3: third person, GEN: genitive, MOD: modal particle, OBJ: object marker, PL: plural, PRF: perfect, SG: singular.

(SUZUKI Fumiki)

ALIGNMENT IN SINITIC

A1 (Dependent-marking, AS/P)

| A1-1 (prepositive)

| A1-2 (postpositive)

— A4 (No-marking, SVO)

○ E4 (No-marking, SOV)



Figure 15.5.1: Alignment in Sinitic.

## Alignment in Hmong-Mien

### 1. Classification

In this article, we examine the geographical distribution of alignment patterns — specifically ways to distinguish the grammatical relations of highly transitive sentences vis-à-vis intransitive sentences — in Hmong-Mien. We have a limited number of data points in this study, as many Hmong-Mien lects are grammatically under-documented. As far as the data of this study are concerned, we only find one single pattern in this language family: the A4 Type. There is no morphological marking regarding nouns/pronouns or verbs to signal grammatical relations. Word order is the only device to indicate this information. In a sentence to denote a highly transitive event, A-V-P is the basic order if there is no specific saliency on P, as can be observed in the following example from a Hmongic language, Lan Hmyo, spoken in the central part of Guizhou, China.

*aAtanApzeB hleA δanB juB -eB -loA.*  
PN kill CLF cow DEM PTCL  
‘Li killed that cow.’

In an (unergative) intransitive sentence, S-V is the basic order, as can be observed in the following example.

*aAnoC ?jenC -loA -waC.*  
bird fly PTCL PTCL  
‘The bird flew away.’

In an unaccusative intransitive sentence, S can follow the verb when it is indefinite; but when S is definite, S must be in the preverbal position. See the following pair of sentences.

*teiBδiA δaA δanB naA.*  
ahead come CLF human  
‘A man is coming/came.’

*aAtanApzeB δaA -waC.*  
PN come PTCL  
‘Li has come.’

### 2. Geographical distribution

Hmong-Mien exhibits a uniform distribution in alignment pattern.

#### Abbreviations

CLF: Classifier, DEM: Demonstrative, PTCL: Particle, PN: Personal name.

(TAGUCHI Yoshihisa)

ALIGNMENT IN HMONG-MIEN

— A4



Figure 15.6.1: Alignment in Hmong-Mien.



## Alignment in Kra-Dai

### 1. Classification

The core argument in Kra-Dai belongs to the type A4 category, which is characterized by no markings for subjects and objects, coupled with the prevalence of the basic word orders AVP and SV.

In the Baoding Li language in Hainan (Ouyang and Zheng 1980:58, 66, 40):

- (1) *tu:k<sup>7</sup>o<sup>1</sup> rau<sup>2</sup> tshia<sup>3</sup>*  
 student read book  
 ‘Students read books.’
- (2) *na<sup>1</sup> ra:u<sup>1</sup>*  
 he laugh  
 ‘He laughs.’

This type is applicable to Kra-Dai in general. However, the so-called “ba 把” construction exists in almost all Kra-Dai languages inside China. For example, consider this Li sentence construction:

- (3) *deu<sup>1</sup>tsu<sup>2</sup> hom<sup>1</sup>wa:u<sup>1</sup> tsho:n<sup>2</sup>du<sup>3</sup> tsho<sup>1</sup>*  
 ACC one CLF bowl put on table  
 ‘Put the bowl on the table!’

Here, *deu<sup>1</sup>* serves as “ba” in Chinese. This type belongs to A1.

Another subtype A1b is found in Khamti Shan, wherein a human endpoint, prototypically a recipient of a physical transaction, is marked by “mai” (here) as shown in (4) (Inglis 2018: 135–136). In addition, an animate or inanimate object of a transitive verb is marked by “mai” (here) if foreground information is being provided as shown in (5) (Inglis 2018: 140–142). The *to<sup>3</sup> ksang<sup>5</sup> mai<sup>2</sup> nakaw<sup>1</sup> am<sup>3</sup> man<sup>4</sup> pe<sup>1</sup>*

‘whatever animal it defeats’ forms the topic and is not new information because it is presented in the previous sentence (Inglis 2018:141).

- (4) *maeu<sup>4</sup> man<sup>4</sup> mai<sup>2</sup> pap<sup>1</sup> haeu<sup>2</sup> aw<sup>4</sup>*  
 2s 3s LOC book give Q  
 ‘Did you give the book to her?’
- (5) *nai<sup>1</sup>se<sup>1</sup>mau<sup>5</sup>kaa<sup>4</sup> to<sup>3</sup> ksang<sup>5</sup> mai<sup>2</sup>*  
 moreover animal what FGD  
*nakaw<sup>1</sup> am<sup>3</sup> man<sup>4</sup> pe<sup>1</sup> mai<sup>2</sup> ki<sup>4</sup>*  
 ever NOM 3s defeat FGD if  
*yaa<sup>1</sup> kaapkin<sup>3</sup> u<sup>5</sup>*  
 TOP devour IPFV.I  
 ‘Moreover, as for WHATEVER ANIMAL THAT IT DEFEATS, (it) devours.’

In Phake and Aiton Tai, subtype A1b comprises the original AVP word order; however, a preposition may be added to P. This preposition is not a prerequisite; a prepositional phrase is added only in the cases in which A and P are both animate (Morey 2005: 272). In (6), *cauk<sup>1</sup>* ‘basket’ is not in a prepositional phrase, whereas, *huu<sup>1</sup> suk<sup>1</sup> aa<sup>1</sup> hɔm<sup>1</sup> ŋi<sup>2</sup> raa<sup>2</sup> ŋi<sup>2</sup> ru<sup>3</sup> ru<sup>3</sup>* ‘Ahom commander Ngi Ra Ngi Reu Reu’ is marked in the prepositional phrase as shown in (7).

- (6) *nāŋ<sup>2</sup> piŋ<sup>1</sup> nā<sup>1</sup> ye<sup>4</sup> pā<sup>2</sup> cauk<sup>1</sup>*  
 lady Pingya PRT carry/bring basket  
*khau<sup>3</sup> se<sup>6</sup>*  
 rice PRT  
 ‘Miss Pingya was carrying a basket of rice.’
- (7) *tep<sup>1</sup> huu<sup>1</sup> khaat<sup>1</sup> kaa<sup>1</sup> caa<sup>2</sup>*  
 cut head separate GO to

huu<sup>1</sup> suuk<sup>1</sup> aa<sup>1</sup> hɔm<sup>1</sup>  
 commander Ahom  
 ŋii<sup>2</sup> raa<sup>2</sup> ŋii<sup>2</sup> ruu<sup>3</sup> ruu<sup>3</sup>  
 Ngi Ra Ngi Reu Reu

‘He cut off ther head of Ahom Army  
 commander, Ngi ra Ngi Reu Reu.’

## 2. Geographical distribution and interpretation

In Figure 1, type A4 is denoted by — and type A1 by |. Hence, the place where both types exist resembles +. Although some languages not categorized under type A1 also exist within China, these languages lack detailed grammatical descriptions; consequently, they do not bear any trace of the “ba” construction. In the Southeast Asian Kra-Dai languages, including Bangkok’s Thai and Vientiane’s Lao, the existence of the “ba” construction has not been found. Type A1b is found in Myanmar and India, with the latter influence interpreted as the result of an aerial contact with the Tibeto–Burman language (Morey 2005: 270).

As described by Ouyang and Zheng (1980:40), “The ‘ba’ construction is scarcely used in Li language. Instead, the Chinese construction ‘ba + object + verb + complement’ is expressed in Li as ‘verb + object + complement’. For instance, the Chinese construction ‘ba<sup>3</sup> wan<sup>3</sup> da<sup>3</sup>po<sup>4</sup>, ba +




bowl + hit + break) is expressed as ‘tha:i<sup>2</sup> wa:u<sup>1</sup> pho:n<sup>3</sup>’ (hit + bowl + break, ‘break a bowl’ in Li. With the growing Chinese influence, the use of deu<sup>1</sup> as a preposition continues to increase...” Liang (1980: 59) explained that in Maonan language, the use of the “ba” construction is not yet common, except among learned people. Some languages borrow the same word form “ba” from Chinese, while other Kra-Dai languages also make use of calque expressions such as *deu<sup>1</sup>* and *təi<sup>2</sup>* (meaning ‘take’). Hence, this construction seems to be borrowed from individual Kra-Dai languages independently under the recent Chinese influence.

### Abbreviations

2s: second person singular. 3s: third person singular, ACC: accusative, CLF: classifier, FGD: foregrounded object, IPFV.I: first imperfective grammaticalized form ‘live’, LOC: locative, NOM: deverbal nominal marker, PRT: particle, Q: interrogative (question) particle, TOP: topic in information structure.

(ENDO Mitsuaki, TOMITA Aika,  
 HIRANO Ayaka)

ALIGNMENT IN KRA-DAI

-  A4
-  A4 plus A1 (“ba” construction)
-  A4 plus A1b

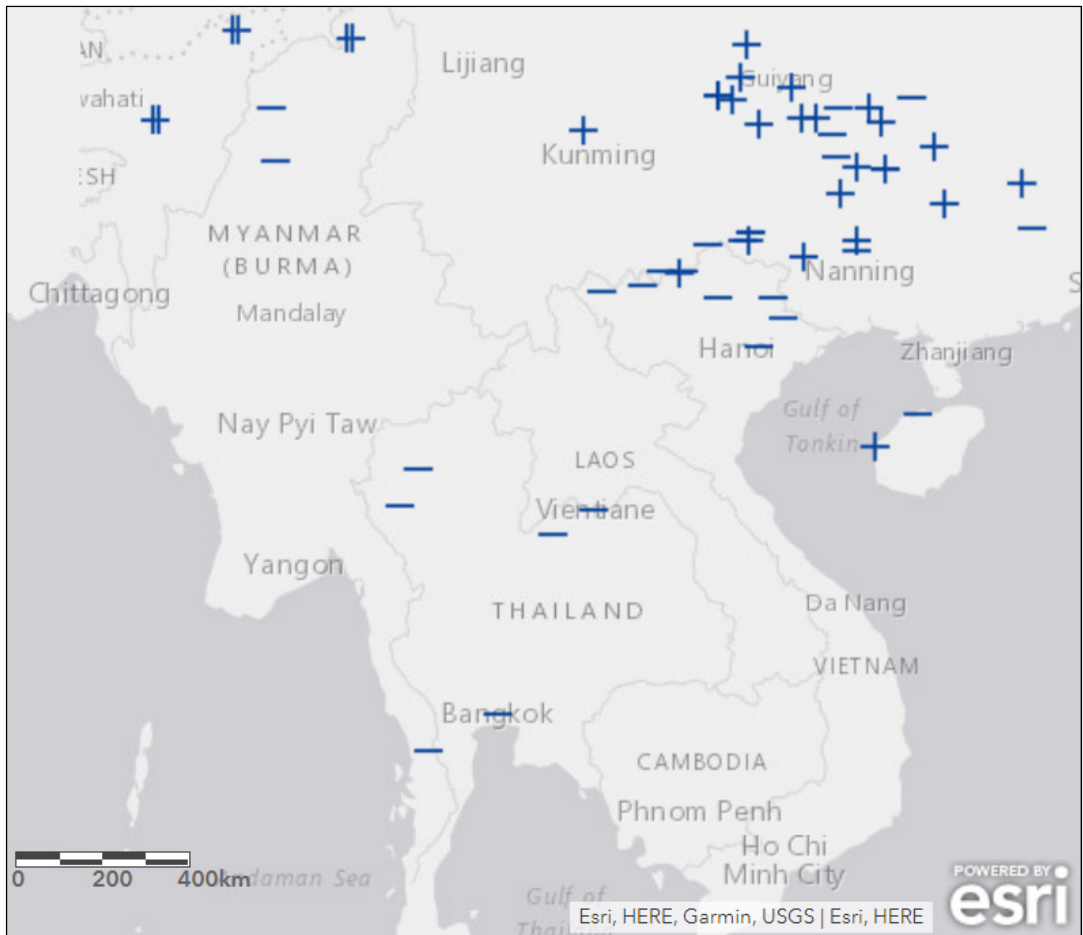


Figure 15.7.1: Alignment in Kra-Dai.

## Alignment in Tibeto-Burman

### 1. Classification

Tibeto-Burman (TB) languages exhibit extensively divergent alignment patterns, types of which include the [A] nominative–accusative, [B] ergative–absolutive, [D] tripartite, and [E] the neutral along with person-marking patterns on the predicate. The present study classified alignment patterns noted in common sentence types to be studied within the project, particularly transitive statements with equally animate arguments and high transitivity (Shirai, this volume). Several languages display split patterns based on animacy, definiteness, or pragmatics. However, such split patterns are eliminated when only the common type of sentence is addressed. The alignment patterns observed in 317 TB languages/dialects are listed in subsequent sections based on data collected from primary and secondary sources. Single language names precede group names, inscribed in square brackets.

[A] The nominative–accusative or anti-agentive type

A1: *Dependent-marking*. Typically, the O is marked while the A and the S are unmarked in such alignment patterns, as shown in Example (1). Burmish, Loloish (also E4), Jinghpaw–Luish, Bodo–Garo, nDrapa [Qiangic], and Manang [Tamangic] incorporate this type of pattern.

(1) nDrapa [Qiangic] (Shirai’s fieldnotes)

- a. *ŋóró teíú xwí*  
 3SG now leave  
 ‘He has just left.’

- b. *míwó pəhɿ́=perɿ zé-a =re.*  
 woman child=NSUB fetch-PFV =FAC  
 ‘The woman (kidnapped and) brought the child.’

AX3: *Double-marking with a non-nominative–accusative agreement pattern*. Generally, the O is marked differently from the A and the S in such alignment patterns, but the agreement configuration is hierarchical. Example (2) presents Jinghpaw sentences with the third person S/A/O. Example (3) exemplifies the hierarchical agreement arrangement that preferentially marks the first person. Trung [Nungic] (also DX3) and Jinghpaw [Jinghpaw–Luish] encompass this type of pattern.

(2) Jinghpaw [Jinghpaw–Luish] (Kurabe’s fieldnotes)

- a. *éánthe gəbù-ŋà-m-àʔ-ʔay.*  
 3PL be.happy-CONT-PL-3-DECL  
 ‘They were happy.’
- b. *éánthe=gò éi=phéʔ*  
 3PL=TOP 3SG=ACC  
*ń-kâm-m-àʔ-ʔay.*  
 NEG-believe-PL-3-DECL  
 ‘They did not believe him.’

(3) Jinghpaw (Kurabe’s fieldnotes)

- a. *ŋay nyéʔ=ʔàʔ ʔwá=phéʔ*  
 1SG 1SG.GEN=GEN father=ACC  
*tsóʔ-ràʔ-ŋà-ŋŋ-ay.*  
 love-like-CONT-1SG-DECL  
 ‘I love my father.’
- b. *nyéʔ ʔwá ŋay=phéʔ*  
 1SG.GEN father 1SG=ACC  
*tsóʔ-ràʔ-ŋà-ŋŋ-ay.*  
 love-like-CONT-1SG-DECL

‘My father loves me.’

A4: *No marking*. The S, the A, and the O do not receive morphological marking. As Example (4) demonstrates, the constituent orders are SV and AVO. Baic and Karenic include this pattern type.

(4) Pwo Karen [Karenic] (Kato 2017: 946, 950)

- a. *jə mə li*  
1SG IRR go  
‘I will go.’
- b. *θàʔwà thè thwí*  
Thawa kick dog  
‘Thawa kicked the dog.’

[B] The ergative–absolutive type

B1: The A characteristically acquires the ergative marker while the S and the O remain unmarked, as illustrated by Example (5). This pattern type is observed in languages within Himalayish (including Tibetic), Qiangic, Nusu [Loloish], Malimasa [Naish], Larong sMar, Lamo, Songlin [isolate], and others.

(5) Amdo Tibetan (Ebihara 2019: 135, 136)

- a. *ŋa nqo-dzi*  
1SG go.IPF-FUT.EGO  
‘I will go.’
- b. *dordze=kə tsʰeraŋ tsa=təŋ=zək*  
PSN=ERG PSN search=ACMP=IE  
‘Dorje searched Tserang.’

BX3: The A is marked differently from the S and the P. Moreover, the predicate displays a non-ergative type of person marking. Examples (6) and (7) demonstrate the typically hierarchical

verbal agreement pattern. Example (7) illustrates that the first person is preferentially marked in Japhug. This pattern type exists in languages within Kiranti, Kuki–Chin, Qiangic, Newar, and Kinnauri.

(6) Japhug [Qiangic] (Jacques 2021: 293, 854)

- a. *teʰeme nura tʰu-sta-nuu*  
woman DEM:PL AOR-wake.up-PL  
‘The women woke up.’
- b. *rgxtpu nu ku u-tɕu*  
old.man DEM ERG 3SG.POSS-son  
*ja-stʰoɕ tɕe,*  
AOR:3→3'-push LNK  
‘The old man pushed his son, but...’

(7) Japhug (Jacques 2021: 239, 340)

- a. *stu ku-mɔku nu*  
most SBJ:PCP-be.first DEM  
*a-pi ku*  
1SG.POSS-elder.sibling ERG  
*piú-wy-sat-a, nu u-qʰu*  
AOR-INV-kill-1SG DEM 3SG.POSS-after  
*tɕe, pyɔtɕu ts-sci-a*  
LNK bird AOR-be.born-1SG  
‘First, my elder sister killed me, and then I was reborn as a bird.’
- b. *izora ku, nɔki, tsʰuβdun*  
1PL ERG FILLER TOPO  
*ɕaŋlo nura ‘stɔtpa-pu’*  
upstream.from DEM:PL PLN-person  
*tu-ti-j ŋu.*  
IPF-say-1PL be:FAC:NPST  
‘We call the people [who live] in Tshobdun and further upstream ‘Stotpa’.’

[D] The tripartite type

D1: The S, the A, and the P present morphological markings that differ. For example, the S is unmarked in Chantyal as elucidated in Example (8a). Example (8b) evinces that the A takes the ergative

marker, whereas a human or anthropomorphized O takes the dative marker. Languages that belong to Tamangic and Gochang [Qiangic] show this pattern type.

(8) Chantyal [Tamangic] (Noonan 2005: 99, 56)

- a. *bura mənchi hya-i*  
old person go-PFV  
'The old person left.'
- b. *syal-sə bhālu-ra yəwta əlko*  
jackal-ERG bear-DAT one high  
*phāra-ye tawko-ri pho-si-rəl*  
cliff-GEN edge-LOC take-ANT-SEQ  
'Jackal took Bear to the edge of a high cliff, and...'

DX3: As exhibited in Example (9), the S, the A, and the P are differently marked, and the predicate exhibits agreement even though this agreement pattern is not tripartite. Trung (also A3-1) and Rawang [both Nungic] display this pattern type.

(9) Rawang [Nungic] (Onishi 2015: 5, 2016: 26)

- a. *dzòntsè ədzēr =ē.*  
student run =NPST  
'The student runs.'
- b. *àŋ=i wē=gú ʔəgú=səŋ sət-ʔù.*  
3SG=ERG DEM=CLF dog=ACC kill-3P  
'He killed the dog.'

[E] The neutral type

E2: The S, the A, and the O do not bear morphological markings. However, there is a typically hierarchical person-marking system, as noted in Examples (10) and (11). Example (11) illustrates the hierarchical pattern observed in Situ. Bola Situ and Mawo Northern Rma [Qiangic] show this pattern.

(10) Bola Situ [Qiangic] (Nagano 2021: 197, 198)

- a. *wuyojis to-thal-nč.*  
3DU DIR-go.PST-3DU  
'They two climbed.'
- b. *norbu dawa tutop{to-wu-top-w}.*  
Norbu Dawa PST-3>3-hit-3SG>3  
'Norbu hit Dawa.'

(11) Bola Situ (Nagano 2021: 88, 89)

- a. *nəjōyo wujōyo tənə-sno-ñ.*  
2PL 3PL 2-APP-schold-2PL  
'You (PL) will scold them.'
- b. *wujōyo nəjōyo*  
3PL 2PL  
*tunəsnoñ{tə-wu-nə-sno-ñ}.*  
2-INV-APP-schold-2PL  
'They will scold you (PL).'

E4: The S, the A, and the O do not exhibit morphological markings. Moreover, the unmarked constituent order is verb-final, as Example (12) illustrates. Typically, the A and the O are distinguished by constituent order (AOV) or context. This pattern type is evident in languages within Loloish, Qiangic, Naish, and Tujia.

(12) Jinuo [Loloish] (Hayashi 2009: 84)

- a. *ʃue<sup>33</sup>sɿŋ<sup>55</sup> zo<sup>55</sup>-khjo<sup>35</sup>-ja<sup>42</sup>-næ<sup>44</sup>.*  
student walk-ACMP-finish-SFP  
'The students have all gone.'
- b. *jo<sup>33</sup>kjə<sup>55</sup> khur<sup>33</sup>ŋi<sup>5</sup> thə<sup>35</sup>-mɿ<sup>35</sup>.*  
mosquito dog bite-PST  
'A mosquito bit a dog.'

A1, B1, BX3, and E4 are the most common among these types of alignment patterns, while AX3, D1, DX3, and E2 are limited to one or some languages/dialects. A4 is limited only to languages classified

into two groups. Type C does not represent the primary pattern type in any language. Some languages (Prinmi, Kurtöp, Tshangla, Kyirong Tibetan, etc.) may mark the subjects of intransitive predicates as either ergative or agentive within marked contexts but usually not in common-type sentences.

We also observed varied split patterns: for instance, (a) hierarchy of nouns encompassing a split based on animacy and another between nouns and pronouns, (b) lexical property of verbs, (c) information structure, (d) features of noun phrases such as definiteness, and (e) word order.

## 2. Geographical distribution and interpretation

Figures 15.8.1 and 15.8.2 present the geographical distributions of the alignment types in TB languages. Determining the relative chronology by type from their geographical distribution alone would be difficult. Nonetheless, we would like to discuss this aspect in the present study by referencing the results of previous historical-linguistic studies.

Type A is primarily found in the broader Mainland Southeast Asian areas: Myanmar, Thailand, Northeast India, and Southwest China, with sporadic distribution in Nepal. In particular, the languages used in the southern regions tend to be Type A. The languages spoken in the China–Myanmar border area also display the alignment pattern type AX3.

Type B is extensively dispersed in the Tibetan Plateau, adjacent regions, and Northwestern Myanmar. This type of sentence pattern is the most widespread but geographically clustered. Additionally, Type BX3 is distributed across the southern

and eastern foothills of the Himalayas, namely, Nepal, Himachal Pradesh, Northeast India, Western Myanmar, Sichuan, and Yunnan.

Type D is observed sporadically in Nepal (Tamangic), Western Sichuan (nGochang), and the China–Myanmar border (Nungic). The use of DX3 is restricted to the China–Myanmar border area.

Type E exists predominantly in the eastern regions and features as an enclaved distribution as well in Puroik, spoken in Southern Tibet. The use of Type E2 is limited to Western Sichuan.

In sum, every alignment pattern type displays a clustered distribution. Such distribution suggests that each alignment pattern developed in its usage areas.

Previously conducted comparative linguistic studies did not deduce relational morphology at the Proto-Sino-Tibetan stage (e.g., LaPolla 2017). The morphology noted during the Proto-TB stage approximated the role-dominated system typically found in Lolo-Burmese (LaPolla 1992a, b). The ergative (or agentive) and primary object markings in TB generally evolved to disambiguate the semantic roles (*ibid*).

Thus, we posit the following hypothesis by applying our classifications to the aforementioned observations: Type E4 denotes the oldest alignment pattern, and Types A and B developed in their locational contexts. Our data reveal that Loloish languages characteristically display Type E4 alignment patterns in common-type sentences. They also show splits that alternate with A1 or B1 under varied conditions such as constituent order and pragmatics. As Example (12) demonstrates,

all arguments can be left unmarked in Jinuo (Type E4). However, Example (13) evinces that the object can be followed by the particle *le*<sup>33</sup> once it shifts to the sentence-initial (Type A1 but in pragmatically marked contexts) (Hayashi 2009).

- (13) Jinuo [Loloish] (Hayashi 2009: 131)  
*ki*<sup>55</sup>*ki*<sup>44</sup>=*va*<sup>55</sup>    *teu*<sup>35</sup>*ma*<sup>44</sup>    *jə*<sup>35</sup>-*mɿ*<sup>35</sup>.  
 uncle=OBJ    aunt    scold-PST  
 ‘Aunt scolded uncle. / Uncle was scolded by aunt.’

Numerous languages that evince the Type B1 basic sentence pattern are characterized by splits alternating with C1, D1, or E4. Most Tibetan dialects exemplify this feature; for instance, Example (14) evinces a split pattern that alternate with C1 but in pragmatically limited contexts.

- (14) Lhasa Tibetan (Hoshi & Tahuwa 2017)  
 a. *ŋa*            *ndro-ki* *ŋin*.  
    1SG            go-IPF:EGO  
    ‘I will go.’  
 b. *ŋää*            *te*<sup>hiN</sup>            *ko*.  
    1SG:ERG    go            VOL  
    ‘I will go.’ (with emphasis on the volitional actor)

These facts indicate that our data support LaPolla’s (1992a, b) opinions. We have presented examples (13) and (14) now to elucidate this issue. However, these patterns do not denote the common types to which our study attended.

Considering the geographical distribution, we can hypothesize that Type A developed in the south of the TB area and spread to its central and eastern regions. We conjecture that Type B originated in the

west of the TB area and dispersed through the central and northeastern regions. We also deduce that the Type D morphological alignment pattern is the most recent to develop.

The typical verbal morphology concerning grammatical relations in TB is labeled “pronominalization.” The addition of affixes derived from personal pronouns characterizes this morphology. Some languages also encompass inverse affixes. We should consider the following two possibilities from the historical–linguistic viewpoint. Should we reconstruct this phenomenon regarding the proto-language (e.g., DeLancey 1989, Jacques & Pellard 2021)? Alternatively, should we assume a relatively simple proto-language without person-marking patterns from which the morphology gradually evolved into different groups (e.g., LaPolla 1992a, Matisoff 2013: 35)?

The TB verbal morphology is reflected in our study in terms of grammatical relations as Types AX3, BX3, DX3, and E2. All types, except for the relatively widespread Type BX3, exhibit geographically concentrated distributions in the central region. Further, no languages prevailing in the eastern, northern, and southern peripheral regions incorporate the person/number agreement on the predicate. Given the general tendency for old forms to remain in the peripheral regions (Yanagita 1930), the geographical distribution of AX3, BX3, DX3, and E2 suggests that the verbal morphology of grammatical relations is comparatively new in TB.

A comparison of the dependent-marking and head- or double-marking types also revealed that Type BX3 is distributed in the



peripheral regions of the Type B area and is divided by the Type B1 distribution. This finding suggests that Type BX3 could be older than Type B1.

Meanwhile, Baic and Karenic display the Type A4 SVO constituent order without morphological marking. Baic was substantially influenced by Chinese. Kato (2019) has asserted the difficulty of determining the evolution of the constituent order observed in Karenic languages. However, their loanwords suggest that the Karen people were in contact with the Mon (Austroasiatic) at a very early stage.

The discussion presented above enables us to hypothesize the development of grammatical relations in TB in the following manner:

$$E4 > \begin{array}{l} A1, AX3 \\ E2 > BX3, \\ B1 \end{array} > D1, DX3, A4$$

### Abbreviations

1, 2, 3: person, ACC: accusative, ACMP: accomplishment, ANT: anterior, APP: applicative, AOR: aorist, CLF: classifier, CONT: continuous, DAT: dative, DECL: declarative, DEM: demonstrative, DIR: directive, DU: dual, EGO: egophoric, ERG: ergative, FAC: factual, FUT: future, GEN: genitive, IE: indirect evidential, INV: inverse, IPF: imperfective, IRR: irrealis, LNK: linker, LOC: locative, NEG: negative, NPST: non-past, NSUB: non-subject, OBJ: object, PCP: participle, PFV: perfective, PL: plural, PLN: place name, POSS: possessive, PSN: person name, PST: past, SBJ: subject, SEQ: sequential converb, SFP: sentence-final particle, SG: singular, TOP: topic, TOPO: toponym, VOL: volitional.

(SHIRAI Satoko, EBIHARA Shiho,  
IWASA Kazue, KURABE Keita, and  
SUZUKI Hiroyuki)

ALIGNMENT IN TIBETO-BURMAN

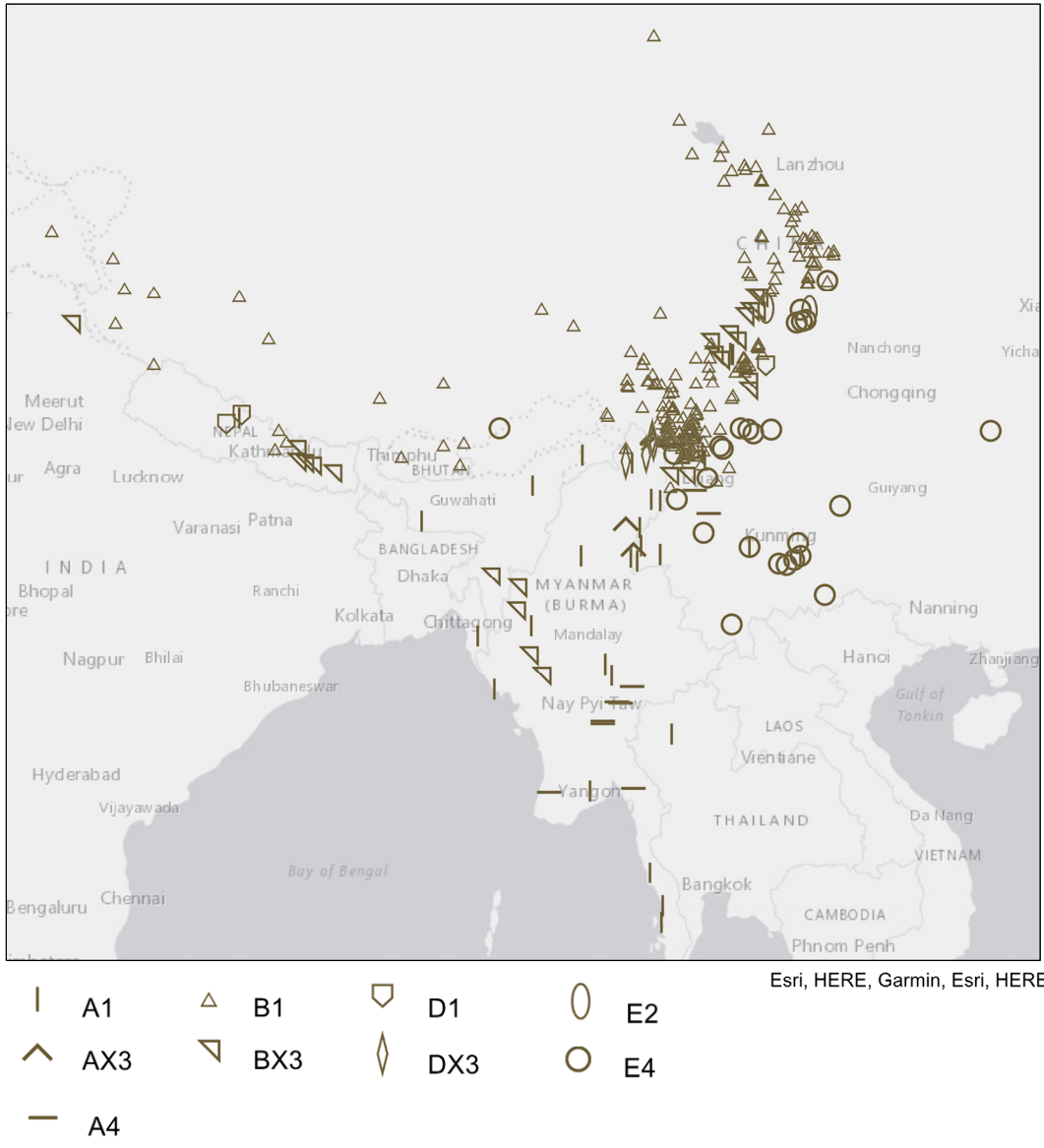
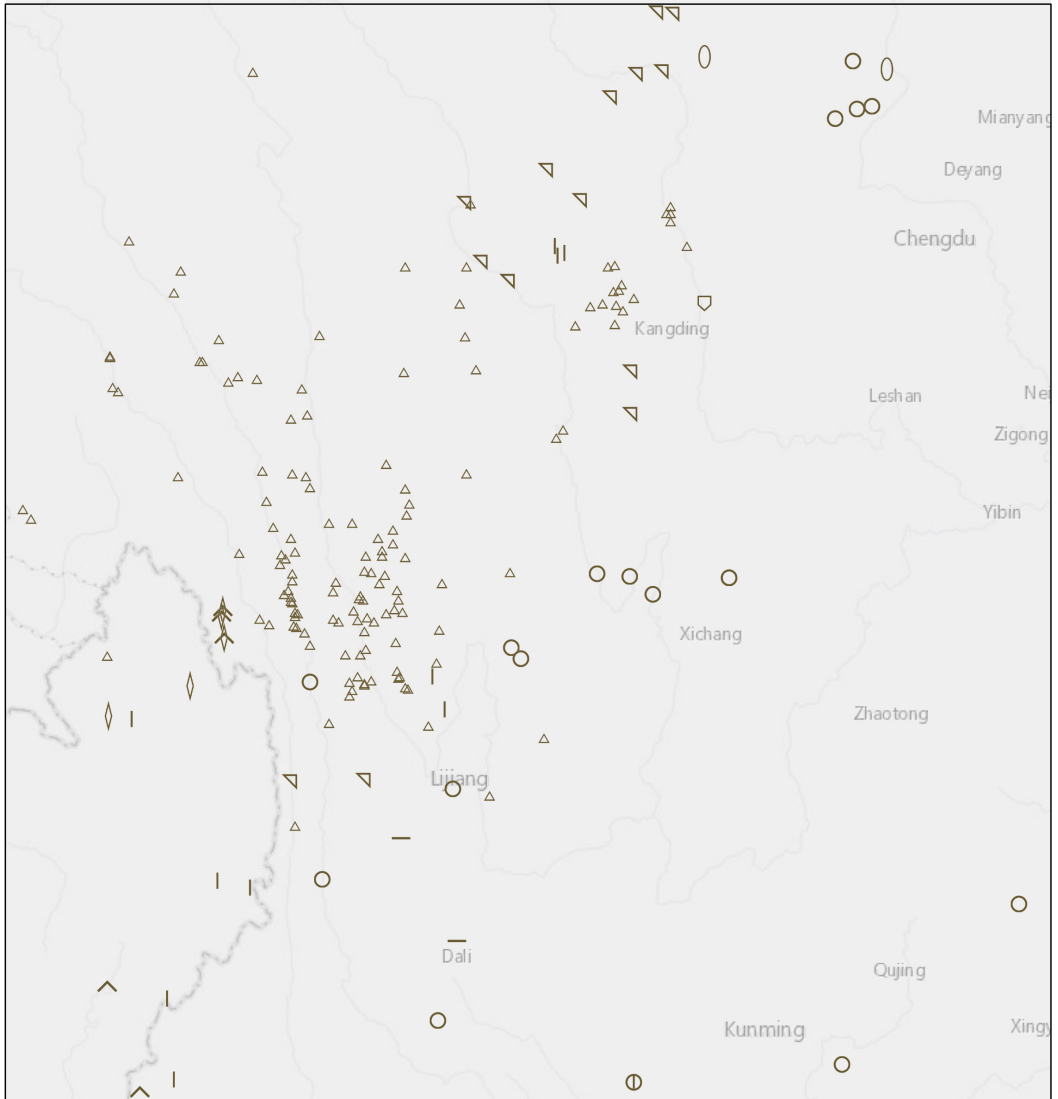


Figure 15.8.1: Alignment in Tibeto-Burman.

ALIGNMENT IN TIBETO-BURMAN



Esri, HERE, Garmin, USGS, Esri, HERE

Figure 15.8.2: Alignment in Tibeto-Burman: enlarged.

## Alignment in Austroasiatic

### 1. Major split in geographic distribution between mainland Southeast Asia and eastern India

All Austroasiatic languages are nominative-accusative (AS/P) in their case-marking patterns. They are classified into two major groups—one in mainland Southeast Asia, the other in east India—based on the use of markers denoting core cases such as subject and object in transitive sentences.

While the languages in Southeast Asia have no case markers and thus are Type A4, those on the Indian subcontinent and Malay Peninsula have head-marking clitics or pronouns denoting animate subjects and/or objects attached to transitive verbs and thus are Type A2. Types A4 and A2 have the respective subtypes A4v and A2v regarding basic word order.

Type A4: No marking with basic verb-medial word order AVP

Subtype A4v: No marking with basic verb-initial word order alternating with verb-medial word order

Type A2: Head marking with basic verb-final word order APV

Type A2v: Head marking with basic verb-initial word order VPA

### 2. Geographical distribution

Type A4 with transitive AVP order prevails in mainland Southeast Asia. The Monic, Pearic, Bahnaric, Katuic, Khmuic, Mangic, and Palaungic subgroups of Mon-Khmer languages are of this type. It should be noted, however, that languages may vary in their intransitive word order. For example,

Khmer is Type A4 with both SV and VS patterns as follows.

(1) *knom nam baaj*  
1SG eat rice  
I eat rice.

(2)a *pliəŋ tləək*  
rain fall  
It rains. (Ueda 2020:85)

(2)b *tləək pliəŋ*  
fall rain  
It rains. (Ueda 2020:85)

According to Ueda (2020), the VS order is favored in case it denotes an implicit result after the preceding context expresses some kind of cause, although native Khmer speakers do not observe clear semantic differences between SV and VS sentences.

Type A2 with transitive APV order dominates on the Indian subcontinent, where people speak the Munda subfamily of Austroasiatic languages, such as Santali, Mundari, and Kharia mostly in the state of Jharkhand; Sora in the state of Odisha; and Korku in the state of Maharashtra in East India. They are head-marking languages with no case marker attached to the agent or patient argument, but clitics denoting the agent and patient follow the verb in case they are animate. The following (3) is an example of Santali verb phrases with the clitics denoting A and P respectively.

(3) *dal-kid-ij-a-e*  
strike-PST:A-1SG:OBJ-FIN-3SG:SUBJ  
He struck me. (Gosh 2008:56)

(4) is a Mundari AVP sentence with a proper noun A and a lexical noun P with the subject marking clitic.

- (4) *Soma maŋdi=ʔ jom-ke-d-a*  
 Soma food=3SG:SUBJ eat-COMPL-TR-IND  
 Soma ate the food. (Osada 2008:146)

The Aslian languages of the Malay Peninsula—Jahai, Semaq Beri, and Ceq Wong—are also Type A2. In Semaq Beri, a pronoun denoting an obligatory agent follows transitive verbs. In Ceq Wong, on the other hand, a preverbal pronoun denoting the agent appears with the transitive verb.

Car Nicobarese, isolated in the Indian Ocean, is of an exceptional A2v in that the verb is followed with a clitic denoting the patient, with basic verb-initial word order VPA.

- (5) *ha-cát-ŋen=ʔək lí ʔərə cin*  
 CAUS-lose-away=AGR book 1S  
 I lost the book. (Sidwell 2020:89)

The split in geographic distribution between A4 and A2 languages provides no clue to historical changes in the morphosyntax of the language family. Jenny, Weber & Weymuth (2015) suggest that the APV word order and head-marking morphology of the Munda subfamily might

be the result of influence from dominant Indo-European or Dravidian languages.

Another exceptional A4v subtype—head initial with verb-initial order—is spoken in regions quite distant from each other. One is Palauk Wa of the Palaungic subgroup spoken in Cangyuan County, Yunnan, China (雲南省滄源佤族自治縣). Palauk Wa has VAP with alternative AVP, but the basic order cannot be clearly established. The following (6)a,b are from Yamada (2020:138-9).

- (6)a *saŋ rhuup nəh rəm tauʔ*  
 IRR eat 3SG soup vegetable  
 He will have a vegetable soup.  
 (6)b *nəh saŋ rhuup rəm tauʔ*  
 3SG IRR eat soup vegetable  
 He will have a vegetable soup.

Another is Pnar of the Khasic group in the state of Meghalaya in Assam. Unlike the standard Khasi of Type A4, the basic word order of Pnar is verb-initial VAP, although AVP is also possible.

### Abbreviations

1, 2, 3: person, A: active, AGR: agreement, CAUS: causative, FIN: finitc, SG: singular, PST: past, OBJ: object(ive), SUBJ: subject, COMPL: completion, TR: transitive, IND: indicative, IRR: Irrealis.

(MINEGISHI Makoto, SHIMIZU Masaaki)

## ALIGNMENT IN AUSTROASIATIC

- A4
- A2
- A4v
- A2v

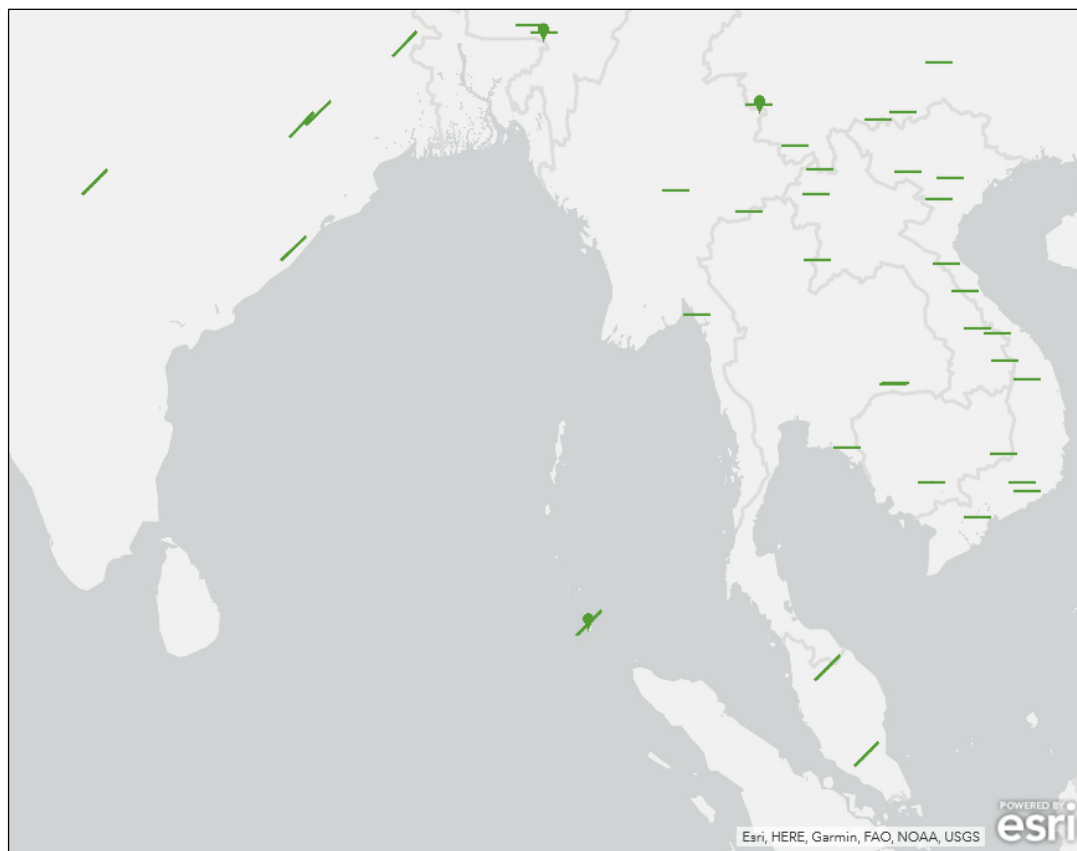


Figure 15.9.1: Alignment in Austroasiatic.

## Alignment in Austronesian

### 1. Classification

Austronesian languages exhibit a variety of grammatical relations in terms of case marking and alignment of nominal arguments. The level of verbal morphology varies from very rich ones in Philippine languages to relatively simple ones in Malayic and some of Oceanic languages. Nevertheless, most languages do exhibit verbal morphology related to grammatical voice, which, in most languages, correlates word order or marking on the nouns that serve as core arguments.

There have been extensive discussions on morpho-syntactic alignment of many Austronesian languages because it is not easy to decide what is the ‘basic’ transitive construction, which is supposed to involve the simplest verb form. In many languages in Taiwan, Philippines and Indonesia, however, a verb might take equally complex form in two or more grammatical voices thus it makes arguable which is the ‘most basic’ transitive verb. These languages are often called ‘symmetrical voice language’ (cf. Himmelmann 2005). There has been a considerable amount of discussion whether such a language is an accusative or an ergative. This study concludes that these symmetrical voice languages are categorized into ‘other patterns’. The subtypes are posited so as to reflect researchers’ analyses on the grammatical alignment, which quite often involve perspectives on syntactic and discourse ergativity.

- C3: S1/S2 (Split of S) Double-marking
- D1: A/S/P (Different marking on A, S and P), Dependent-marking
- G3-1: Symmetrical voice, Double-marking, Analyzed as AS/P (Nominative-accusative alignment)
- G3-2: Symmetrical voice, Double-marking, Analyzed as A/SP (Ergative-Absolutive alignment)
- G4-1: Symmetrical voice, No marking, Analyzed as AS/P (Nominative-accusative alignment)
- G4-2: Symmetrical voice, No marking, Analyzed as A/SP (Ergative-Absolutive alignment)

### Example sentences:

- (1) Type C3 Split of S: Acehnese (Donahue, 2006)
  - a. *Gopnyan na-lôn[A]-timbang-geuh[P]*  
3sg IND-1sg-shoot-3sg  
‘I shot him’
  - b. *Gopnyan rô-t-geuh[S, agentive]*  
3sg fal-3sg  
‘He fell’
  - c. *Gopnyan ka-geu[S, N.A.]-jak u-keude*  
3sg INCH-3sg-go to-town  
‘He went to town’

One of the type C-3 alignment is shown in example (1). The proclitics are used to mark an Agent as *geuh* in (1a), and a more agentive Subject (=intransitive subject) as in (1b). The enclitics are used to mark an Object as well as a nonagentive Subject as in (1c).

Äiwoo is a head-marking language where the person/number of intransitive subjects

[S] is marked by prefixes on the verb (as in example 2a) while transitive subjects [A] are marked by suffixes (as in example 2b). The pronominal [P] is not marked by either prefixes or suffixes but take the independent forms as in (2c). Äiwoo person marking must consequently be considered to show tripartite alignment.

(2) Type D1 Different Marking of A/S/P: Äiwoo (Næss, 2018)

- a. *I*[S]-*ku-wä*.  
1sgMIN.S-IPFV-go  
'I go'
- b. *I-togulo-no*[A].  
PFV-hit-1sgMIN  
'I hit him/her.'
- c. *I-lowâle-mä-mu*[A]            *iu*[P].  
PFV-help-DIR:1sg-2sg    1MIN  
'You helped me.'

One of the type G3-1 language is Bantik, in which A and S are marked by the nominative prefix whereas O is marked by the accusative prefix. In addition, the grammatical role of an NP is dependent on a verb form. A and S are grouped together with respect to the noun marker (= nominative prefix *i-*). A noun marker is selected in accordance with the grammatical voice of the verb, which can be seen in the contrast between an actor voice sentence (3a) and a patient voice sentence (3b), hence it shows a double-marking pattern.

(3) Type G3-1 Symmetrical voice, Double-marking, Analyzed as AS/P (NOM-ACC alignment): Bantik (Utsumi 2005)

- a. *i-piteres*[A]    *na-marou*    *si-ani*[P]  
NOM-Peter    PST-tell(AV) ACC-Annie

'Peter told Annie' (Agent voice)

- b. *i-ani*[P]    *ni-baro-an*    *ni-piteres*[A]  
ACC-Annie PST-tell-PV    GEN-Peter  
'Peter told Annie' (Patient voice)

- c. *i-piteres*[S]    *l<im>agge*  
NOM-Peter    <PST>laugh  
'Peter laughed'

Arta shows an ergative-absolutive alignment in which S is marked in the similar way as O. In example (4a) the subject (*tən*, 1sg) is in absolutive case as in O in (4c), whereas the A in (4b) is in an ergative case. Grammatical voice of the verb is also relevant for the selection of the noun marking, therefore Arta shows double-marking A/SP system.

(4) G3-2: Symmetrical voice, Double-marking, Analyzed as A/SP (ERG-ABS alignment): Arta (Kimoto, 2015)

- a. *Um-aŋay=tən*[S]    *ta*    *Madde:la*.  
AV-into=1sg.ABS SG.OBL Maddela  
'I'll go to Maddela.'
- b. *Adu:p-a:ŋ-u*[A]    *I*    *arta=y*.  
help-LV-1sg.ERG SG.ABS person=SPC  
'I'll help the person.'
- c. *Adu:p-an=muyu=tən*[P].  
help-LV=2pl.ERG=1sg.ABS  
'Help me.'

Indonesian has nor marking on an NP. S and A precedes a verb whereas P follows. However, when a verb is in patient voice as in (5c), P precedes a verb but A follows it.

(5) G4-1: Symmetrical voice, No marking, Analyzed as AS/P (NOM-ACC alignment)

- a. *Ali*[A]    *me-nanam*    *padi*[P]  
Ali    AV-plant    rice  
*di*    *sawah=nya*  
LOC    rice.field=3sg.GEN



- ‘Ali planted rice in his field’, AV  
 b. *Ali*[S] *me-nangis*  
 Ali AV-cry  
 ‘Ali cries’  
 c. *padi*[P] *di-tanam* *Ali*[A]  
 rice PV-plant Ali  
*di* sawah=nya  
 LOC rice.field=3sg  
 ‘Ali planted rice in his field’, PV

Balinese, too, shows alignment pattern of symmetrical voice system in which no marker on NPs. It shows A/SP alignment in which S and P precedes a verb (examples 6a and 6b) whereas A follows it (examples 6b). The verbs in 6a and 6b are bare forms and shows consistent ergativity. When the verb takes an actor prefix A gets the pre-verb position unlike the bare form as in (6c). It is, therefore, concluded that Balinese has an alignment system in which verbs are marked but no marking on a noun is observed.

(6) G4-2: Symmetrical voice, No marking, Analyzed as A/SP (ERG-ABS alignment):

Balinese (Wechsler & Arka 1998: 388)

- a. *Tiang*[S] *edot teka*.  
 I want come  
 ‘I want to come.’  
 b. *Bawi-ne*[P] *punika tumbas tiang*.  
 pig-DEF that OV.buy 1sg[A]  
 ‘I bought the pig.’ (object voice)  
 c. *Tiang*[A] *numbas bawi-ne punika*[P].  
 1sg AV.buy pig-DEF that  
 ‘I bought the pig.’ (actor voice)

## 2. Geographical distribution

Formosan (Taiwan), Philippine languages as well as Indonesian languages exhibit symmetrical voice alternation, and they fall in type G. Those languages are largely divided into double-marking and no-marking languages. In double-marking

languages, core argument nouns take noun/case markers, and their grammatical role (subject/object/oblique) are determined with respect to the verb form in most of the languages. They are analyzed to fall in either type G3-1 with nominative-accusative alignment or type G3-2 with ergative-absolutive alignment. In no-marking languages, which are found in Sumatra and Java islands and Eastern Indonesia, word order is often employed to show grammatical relations. They are categorized either as type G4-1 (nominative-accusative alignment) or type G4-2 (ergative-absolutive alignment).

Researchers on Formosan and Philippine languages as well as on Philippine-type languages in Sulawesi and Kalimantan generally consider that those languages are ergative-absolutive alignment (type G3-2). Rukai in Taiwan, Muna, Bantik, Talaud in Sulawesi, and Kelabit in Kalimantan are the exception to this since they are analyzed as nominative-accusative (type G3-1). No-marking nominative-accusative languages are found among languages of Sumatra, Java and Eastern Indonesia, which fall in type G3-1 or G4-1. Split of case marking on subject (type C3) is not very common although Acehnese in northern Sumatra is claimed to exhibit it (Durie 1985). Äiwoo is the only language within the scope of this paper which exhibit different marking on A, S and P (Type D1, Næss 2015).

### Abbreviations:

1sg: 1st person singular, 2sg: 2nd person singular, 2pl: 2nd person plural, 3sg: 3rd person singular, A: agentive argument of a two-argument verb, ABS: absolutive, ACC: accusative, AV: actor voice, DIR:

ALIGNMENT IN AUSTRONESIAN

directional, ERG: ergative, INCH: perfective, PST: past tense, PV: patient inchoative, IND: indicative, GEN: genitive, voice, SPC: specific  
LV: locative voice, MIN: minimal number,  
NOM: nominative, O: second argument of  
a two-argument verb, OBL: oblique, PFV:

(UTSUMI Atsuko)

- ◆ Type C3
- ▾ Type D1
- ▮ Type G3-1
- ▣ Type G3-2
- ▬ Type G4-1
- ▧ Type G4-2

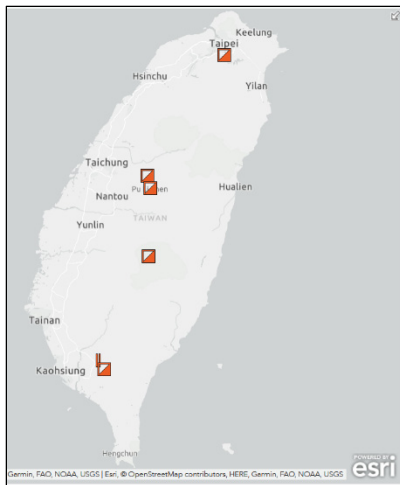


Figure 15.10.1: Alignment in Austronesian (Taiwan).

## ALIGNMENT IN AUSTRONESIAN

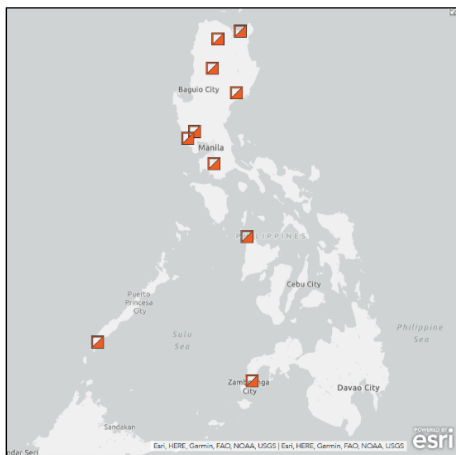


Figure 15.10.2: Alignment in Austronesian (Philippines).



Figure 15.10.3: Alignment in Austronesian (Indonesia).

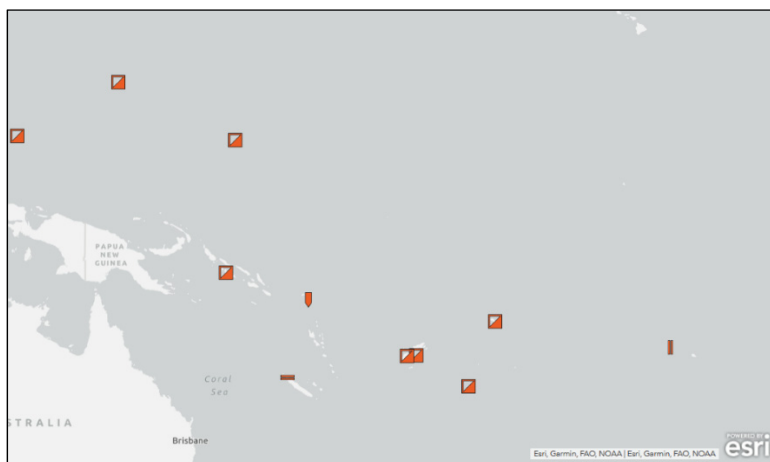


Figure 15.10.4: Alignment in Austronesian (Papua and Pacific Islands).

## Alignment in Tungusic

### 1. Classification

All Tungusic languages have SOV, AN word order and the agglutinative word-formation and also postpositions as the typological characters. It could be said that only the verb-predicate final position in sentences is highly strict, so the other components of the sentence can be omitted.

All Tungusic languages have the apparent accusative form for P, and the zero form is mainly used for subject, that is A and S. Namely all Tungusic languages are classified in one type AS/P, and verbs conjugate with the person and number of subject A and S except in Sibe.

A3: the others

A1: Sibe

In addition, A3 is subclassified into 3 subtypes according to how many case forms for P they have, and how these forms are used.

Table 1: Classification of Tungusic.

	Dependent			Head
	A	S	P	V
A3-1	NOM.	NOM.	ACC.	AS
A3-2	NOM	NOM.	ACCD. ACCIN.	AS
A3-3	NOM.	NOM.	ACC. DES.	AS
A1/E4	NOM.	NOM.	NOM. ACC.	$\varnothing$

A3-1: Hezhe?

A3-2: Evenki, Negidal, Orochon, Ewenke

A3-3: Ewen, Orochi, Udege, Nanay, Ulich, Uilta

Evenki (A3-2) have 2 accusative forms according to the definiteness, Definite-Accusative (ACCD) and Indefinite Accusative (ACCIN).

Table 2: Case markers in Evenki.

	simple	POSS 'my'	PREFL 'own'
NOM	$\varnothing$	-v	
ACCD	-va	-va-v	-vi
ACCIN	-ja	-ja-v	-ja-vi

- (1) a Purta-va-s                      min-du bu:kel.  
 knife-ACCD-2SG.POSS I-DAT give-2SG.IMP  
 'Give me you knife.'  
 (Nedjalkov 1997: 148)
- b D'av-ja-v                            o:kal.  
 boat-ACCIN-1SG.POSS make-2SG.IMP  
 'Make a boat for me.' (ibid. :147)
- c Bi oro-r-vi                            etejet-che-m.  
 I reindeer-PL-PREFL guard-PRS-1SG  
 'I guard my reindeer.' (ibid. :144)

In Ewen (A3-3) the case markers' distribution is very similar to Evenki, only the term Designative case (DES) in Ewen corresponds to Indefinite Accusative in Evenki. On the other hand, the functions between them vary in a few such as in 2) where Designative is used for the beneficial subject.

- (2) Kuma-ŋ-ga-ku                    hie-n.  
 seal-AL.POS-DES-1SG appear-NFUT:3SG  
 'A seal appeared for me (that is, to my benefit)' (Malchukov 1995: 10)

A1/E4 pattern resembles to Mongolic and Turkic languages.

### 2. Geographical distribution and interpretation

It is very clear that Tungusic has only one type AS/P, but also has a few forms for P, which is being lost in China. In Hezhe Accusative form has remained, and Sibe has got the differentiation between zero

ALIGNMENT IN TUNGUSIC

(Nominative) and Accusative forms by the languages contact.

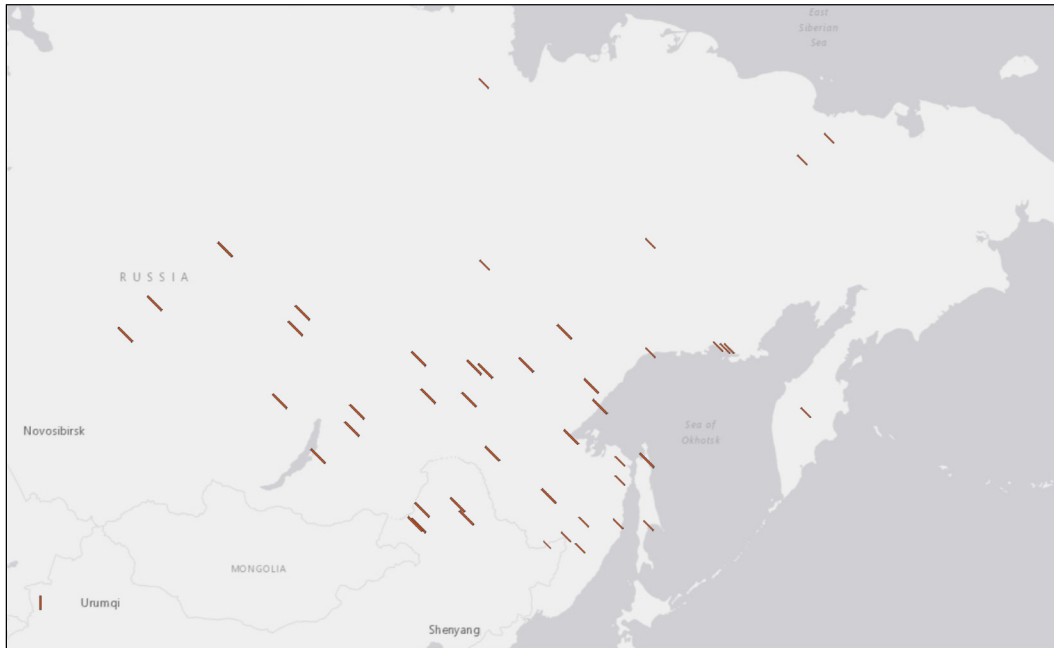
**Abbreviations**

1, 2, 3: person, ACC: accusative, ACCD: definite accusative, ACCIN: indefinite

accusative, AL: alienable, DES: designative, DAT: dative, IMP: imperative, NFUT: non-future, NOM: nominative, SG: singular, PL: plural, POSS: possessive, PREFL: possessive reflexive, PRES: present.

(MATSUMOTO Ryo)

- | A1
- A3-1
- A3-2
- A3-3



Esri, HERE, Garmin, USGS, Esri, HERE

Figure 15.11.1: Alignment in Tungusic.

## Alignment in Uralic

### 1. Classification

Uralic has typologically SVO (in the west) or SOV (in the east), AN word order and the agglutinative word formation. The grammatical relations are marked by the case suffixes and verb conjugations.

All Uralic languages basically belong to Nominative-Accusative type and verbs conjugate with Subject (A3), which can be subgrouped by the following points:

- how to mark P in Dependent-marking
  - a: one form for P
  - b: over 2 forms for P by the definiteness, aspectual function etc.
- what and how to mark in Head-marking ( $y_1$  and  $y_2$  are represented in a same mark on the Map)
  - x: Subject's person and number
    - $y_1$ : Subject's person and number, and Object's number and definiteness
    - $y_2$ : Subject's person and number, and Object's definiteness
    - $y_3$ : Subject's person and number, and Object's number and definiteness, but no accusative form
  - z: Subject's person and number, and Object's person and number

Each Uralic languages are classified as below:

A3ax: Komi, Udmurt (Permian), Mari (Mari), Saami

A3bx: Karelia, Veps, Votic, Izhorian, Estonian, Livonian, Finnish (Balto-Finnic)

A3ay<sub>1</sub>: Nenets, Enets, Nganasan, Selkup (Samoedic)

A3ay<sub>2</sub>: Hungarian

A3ay<sub>3</sub>: Khanty, Mansi (Ob-Ugric)

A3az: Moksha, Erzya (Mordvinic)

According to the grouping system of our project, these types are symbolized as follows:

A3ax → A3-1

A3bx → A3-1d

A3ay<sub>1/2</sub>, A3az → A3-2

A3ay<sub>3</sub> → A3-2/A2

Table 1: Classification of Uralic.

	Dependent			Head
	A	S	P	V
A3ax	NOM.	NOM.	ACC.	AS
A3bx	NOM	NOM.	ACC.~GEN. PART.	AS
A3ay	NOM.	NOM.	ACC.~NOM.	AS/P <sub>1</sub>
A3az	NOM.	NOM.	GEN.	AS/P <sub>2</sub>

Type A3-1 is very simple type. In type A3-1d, for example in Finnish in (1), *kirja* 'book' has some forms although they stand for the object, which express the definiteness, imperfectivity and the object of the imperative mood.

- (1) a. Ostan kirjan.  
buy\_PR.S.1SG book-SG.GEN  
'I'll buy a book.'
- b. En osta kirjaa.  
NEG\_1SG buy\_PTCP book\_SG.PART  
'I won't buy a book.'
- c. Ostin kirjoja.  
buy\_PST.1SG book\_PL.PART  
'I bought some books.'
- d. Osta kirja!  
buy\_IMP.2SG book\_SG.NOM  
'Buy a book!'

(White 2008: 278)

A3-2/A2, that is Khanty and Mansi, has Accusative form only in the pronoun.

Examples from Khanty:

- (2) a. a:ši pox-əl xo:t-əl-na  
 father son-3SG house-3SG-LOC  
 wa:n-sə-lli  
 see-PST-SG/3SG  
 ‘The father saw his son in his house.’

- b. ma naŋ-e:n wa:n-s-e:m.  
 I you-ACC see-PST-SG/1SG  
 ‘I saw you.’

(Nikolaeva 1999: 65, 66)

## 2. Geographical distribution and interpretation

It could be divided in 3 areas. In the east Samojedic and Ugric, in the central Permic, and in the west Finnic. Only Mordvinic in the south is rather different from others.

	West	Central	East
Dependent	b >	a	a
Head	x	x <	y





We can say that there is tendency that the system of the dependent (noun) marking becomes more complicated in the west, and that of head (verb) marking becomes more complicate in the east.

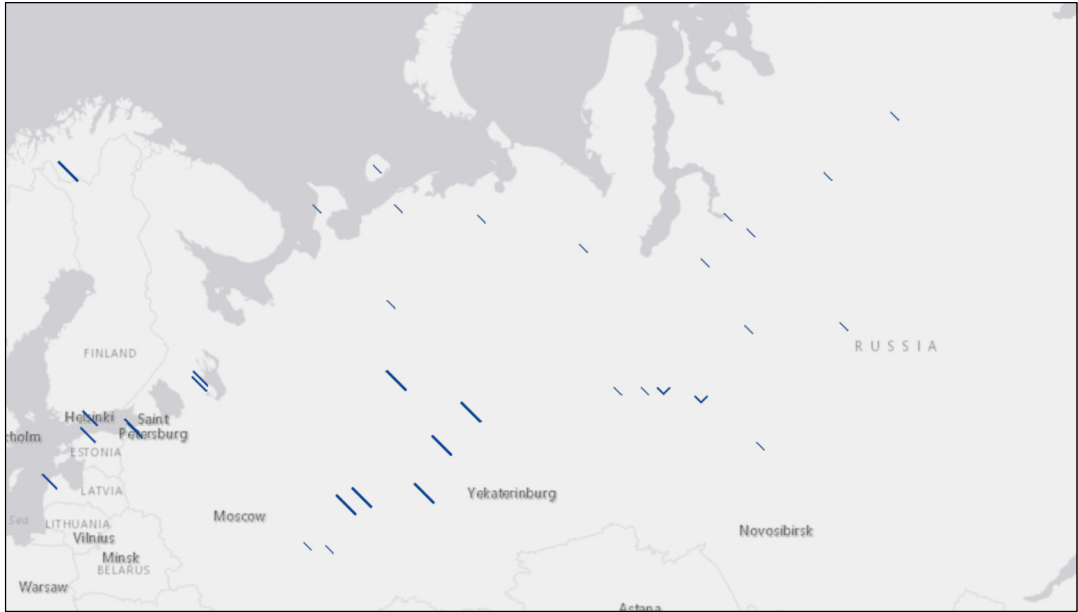
### Abbreviations

1, 2, 3: person, ACC: accusative, AL: alienativble, DES: designative, DAT: dative, GEN: genitive, IMP: imperative, LOC: locative, NOM: nominative, PART: partitive, PL: plural, POSS: possessive, PRS: present, PST: past, PTCP: participle, SG: singular.

(MATSUMOTO Ryo)

ALIGNMENT IN URALIC

-  A3-1
-  A3-1d
-  A3-2
-  A3-2/A2



Esri, HERE, Garmin, USGS, Esri, HERE

Figure 15.12.1: Alignment in Uralic.



## Alignment in Mongolic and Turkic

### 1. Classification

The Mongolic and Turkic languages are all agglutinative in morphology with the basic word order of SOV in syntax. Cases are marked with postpositions. In a simple sentence, the agent/subject and the patient are treated differently in terms of case marking, and therefore the languages belong to the nominative-accusative type in morpho-syntactic alignment.

Most Turkic languages except Salar and Sarıg Yughur and some Mongolic languages such as Moghol, Oirad, Kalmyk, Buryad, Dagur and Khamnigan are double-marking, indicating person and number of an agent/subject both in the argument and in the verb. E.g.,

Buryad:

*Bī nom unša-ba-b.*  
1SG.NOM book read-PST-1SG  
'I read a book.'

Turkish:

*Ben kitap oku-du-m.*  
1SG.NOM book read-PST-1SG  
'I read a book.'

In all Mongolic and Turkic languages, case is manifested in arguments. In simple sentences, nouns used as an agent/subject receive zero case marking and those used as a patient either take or do not take accusative case marking. The addition of the accusative suffix to a noun is conditioned by various factors (see, for instance, K. Hashimoto 1987, Y. Yamakoshi 2011, 2022, Y. Kuribayashi 2020, A. Göksel & C. Kerslake 2005). It is a complex matter, but we can say that

definiteness/specificity of the noun used as a direct object is associated with the phenomenon in all Mongolic and Turkic languages. To speak roughly, the direct object is marked with an accusative case marker when it is definite/specific, and with a zero case marker when it is unspecific. E.g.,

Mongol:

*Čon-Ø xoń-Ø id-ən.*  
wolf sheep eat-PRS  
'A wolf eats a sheep.'

*Čon-Ø en xoń-īg id-əw.*  
wolf this sheep-ACC eat-PST  
'A wolf ate this sheep.'

Turkish:

*Kurt-lar-Ø koyun-Ø ye-r-Ø.*  
wolf-PL sheep eat-AOR-3SG  
'Wolves eat sheep.'

*Kurt-Ø bu koyun-u ye-di-Ø.*  
wolf this sheep-ACC eat-PST-3SG  
'The wolf ate this sheep.'

The following is an example of an indefinite but specific object with the accusative suffix. (Personal communication from Yelda Şahin)

Turkish:

*Bir sözcüğ-ü bir türlü hatırla-*  
a word-ACC somehow remember-  
*ya-mı-yor-um.*  
POSB-NEG-PRS-1SG  
'I cannot remember a word anyway.'

### 2. Geographical distribution and interpretation

All languages show definiteness/specificity-conditioned use of an accusative

case marker, while languages with number and person of an agent/subject in both the argument and the verb are spread except in the southeastern area ranging from Mongolia to Gansu Province in China. (Yuu Kuribayashi provided the author with information about some Turkic languages.) The languages can be classified into the following two types:

		Definite/specific object in accusative case	
		+	-
Person and number of agent/subject in the verb	+	A3d	/
	-	A1d	/

The geographical distribution of the two types may indicate that the presence or absence of double-marking is an areal feature rather than a genetic one.

### Abbreviations

1, 3: person, SG: singular, PL: plural, NOM: nominative, ACC: accusative, PRS: present, PST: past, AOR: aorist, NEG: negative, POSB: possible

(SAITÔ Yoshio)

# ALIGNMENT IN MONGOLIC AND TURKIC

- + Personal endings
  - Mongolic (green line)
  - Turkic (blue line)
- Personal endings
  - Mongolic (green line)
  - Turkic (blue line)

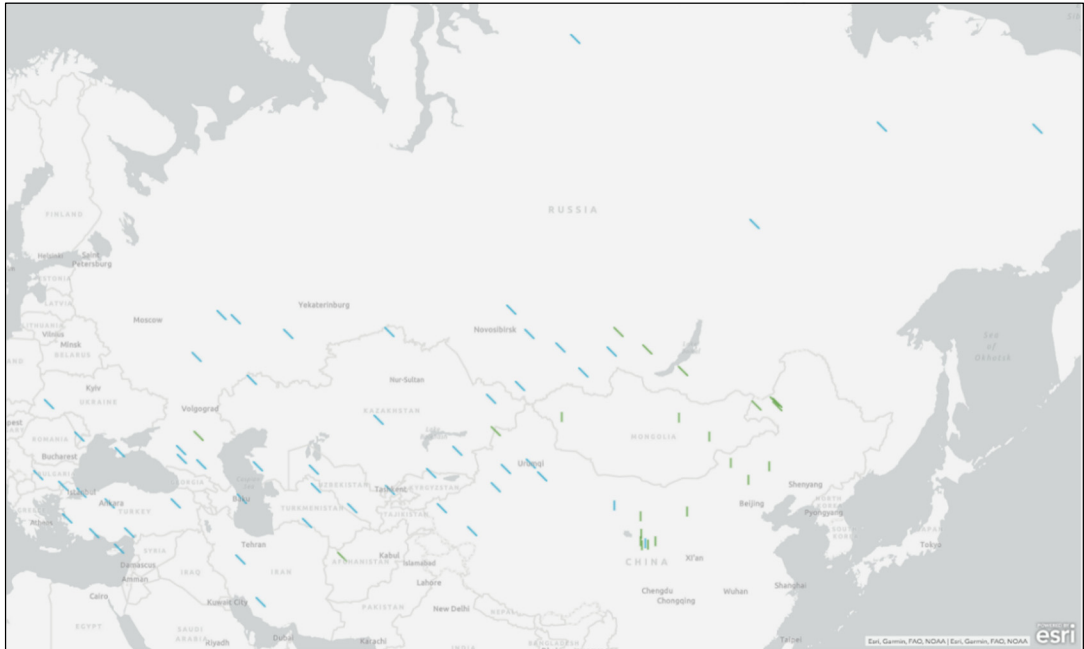


Figure 15.13.1: Alignment in Mongolic and Turkic.

## Alignment in South Asia

### 1. Classification

I describe the languages of Indo-Aryan (IA), some small language families/branches, and language isolates in South Asia. Eleven different symbols are used in the maps following the common classification of grammatical relations used in articles in this volume. Note that this classification is based on the most ‘standard’ sentences.

The numbers of languages classified into each type based on the presentation of grammatical relations in this volume are as follows: This paper covers 76 languages, but the total number is higher because a language might be classified into several types.

A1:	5	BX3:	19
A2:	21	CX3:	1
A3:	26	DX3:	31 (1)
AX3:	2 (1)	E4:	6
B2:	1 (1)	GX3:	8
B3:	15 (1)		

The numbers in brackets are the total number of symbols not shown on the map. This is because where a language must be classified into four types even within its ‘standard’ situations, it is shown as F-class on map, while where a language is classified into three or fewer classes, the symbols are overlaid. Thus, there is a language shown as F [☆] here, Torwali (in northern Pakistan). This language has a system of verbal agreement with a participant in the absolutive case, so it is classified into four classes: AX3/B2/B3/DX3. Squared arguments are the target of verbal agreement in (1).

- (1) a. 

<i>tē</i>
s/he.VIS:ABS

*mū*  
die:PST.3SG.M  
‘he died’ [AX3]
- b. 

<i>māš</i>
man:ABS

*çhi* *kuḍē-dū*  
woman:ABS beat:PRS.3SG.M  
‘the man beats the woman’ [AX3]
- c. *māš*

<i>çhi</i>
woman:ABS

*kuḍī-çī*  
man:ABS woman:ABS beat:PRS.PF.3SG.F  
‘the man has beaten the woman’ [B2]
- d. *ti*

<i>çhi</i>
woman:ABS

*kuḍī-çī*  
s/he.VIS:ERG woman:ABS beat:PRS.PF.3SG.F  
‘he has beaten the woman’ [B3]
- e. *ti* *tes* *kuḍū-dū*  
s/he.VIS:ERG s/he.VIS:ACC beat:PRS.PF.3SG.M  
‘she has beaten her’ [DX3]

Most of the languages I treat here show split marking. The triggering factors of such splits are numerous and wide-ranging. They are commonly found in the region in the following order (see Shirai’s paper in this volume for trigger symbols and details): d (48) > a (45) > g (36) > f (20) > b (17) > c (9) > e (1).

### 2. Geographical distribution and interpretation

I now point out four major clear areal features.

First, there are languages with perfect circles on the islands. These are Andaman languages, Sinhala (IA; Sri Lanka), and Vedda (isolate; Sri Lanka). These languages commonly have the E4 pattern, which is a pattern lacking both case marking and agreement: (2) from Akabea. There is one more language with the E4 pattern in far inland India: Nihali (isolate; central India).

(2) a. *ia ba la əkəlika*

Ø-ia      ba      la      əkə-li-ka  
 3-POSS.SG   son   DEF   SP-die-PLUP

‘his child died’ (Zamponi & Comie 2020: 286)

b. *kat apail la otʃeta ɲərokke*

kat   ab-pail   la   ot-ʃeta   ɲərok-ke  
 that   SP-female   DEF   SP-head   wear-NPST

‘that woman wears a skull (Zamponi & Comrie 2020: 286)’

Second, regarding agreement systems, the languages in Pakistan and the western half of India have ergative (ERG: S/P) verbal agreement, whereas those in the eastern half of India, Nepal, and Bangladesh show the accusative (ACC: S/A) agreement pattern; they are clearly divided into two groups by agreement type. Hindi, the former, *gaī* ‘she/it(F) went’ and *kī* ‘[any subject] did her/it(F)’; Nepali, the latter, *gəyo* ‘he/she/it went’ and *gəryo* ‘he/she/it did [any object]’. In addition, in northern Pakistan and eastern Afghanistan, there coexist languages of both types, and some of them interchange the patterns language-internally depending on a variety of conditions: in Darai (3a) the verb agrees with the subject, (3b) with the possessor, (3c, d) with both the subject and object, while for the sentence (3e) with SVO order the verb does not agree with any argument as showing the default form inflected for third person singular male.

(3) a. *unhen dzəitahat*

unhen	dzə-ta-hat
he.HON	go-NPST-3SG.HON

‘he (HON) goes’ (Dhakal 2015: 7) [SUBJ]

b. *terə duhəi dulhir bijatair*

toi-rə	duhəi	dulhi-r	bija-ta-ir
you-GEN	both	wife-2	give.birth.to-NPST-2SG

‘both of your wives will give birth to children’ (Dhakal 2015: 15) [POSSESSOR]

c. *uhī unhenə bhat detaikan*

u-hī	unhen-kə	bhat	de-ta-Ø	likan
he-ERG	he.HON-DAT	rice	give-NPST-3SG-3SG.HON	

‘he will give him (HON) rice’ [SUBJ/OBJ]

d. *məi ukhrake dzittamik*

məi	u-ke	dzit-ta-	m-	ik
I	he-ACC	defeat-NPST-1SG-3SG		

‘I defeat him’ (Dhakal 2015: 26) [SUBJ/OBJ]

e. *əse anlə bhauzuke*

əse      anlə      bhauzuke-ke  
 again   bring-PST.M   sister.in.law-ACC

‘then he again brought the sister-in-law’ (Dhakal 2015: 25) [NONE]

Third, with reference to case marking systems, most languages located in the northern half of South Asia have an ERG case; on the other hand, none of the languages in the south (except the western coast of India) have it. That is, the ERG case is absent in the south. There are many Dravidian languages in the southern part of South Asia, where the languages do not have ERG alignment (see Kodama’s section on Dravidian). Therefore, it can be assumed that the lack of an ERG case in IA (and other minor) languages spoken in the area is due to language contact with Dravidian. Alternatively, the lack in Andamanese languages might be an inherent feature or might be affected by the Austroasiatic languages in the Nicobar Islands (see Minegishi & Shimizu’s section on Austroasiatic).

While this is generally true of the case marking of agents and subjects, the ‘standard’, i.e., specific (or even definite), referential, *and* identical patients are quite widely and commonly marked by any case other than the absolutive case so that the arguments are morphologically marked. On the maps, A3 (ACC alignment + ACC agreement) and DX3 (tripartite alignment + ERG or ACC agreement) represent languages in such situations. In other words, in most languages of South Asia, either nonspecific, non-referential, or generic patients tend to take no overt case marking: in Urdu (4a, c). This is especially true for inanimate patients: (4e).

- (4) a. *vō billī dēkh-t-ē h-ē*  
 they cat watch-IPFV-M.PL COP.PRS-PL  
 ‘they watch a cat’
- b. *vō billī=kō dēkh-t-ē h-ē*  
 they cat=OBJ watch-IPFV-M.PL COP.PRS-PL  
 ‘they watch the cat’
- c. *unhō̃=nē billī dēkh-t-ī h-ē*  
 they:OBL=ERG cat watch-F COP.PRS-3SG  
 ‘they have watched a cat’
- d. *unhō̃=nē billī=kō dēkh-ā h-ē*  
 they:OBL=ERG cat=OBJ watch-M.SG COP.PRS-3SG  
 ‘they have watched the cat’
- e. *hawā-ē imārat tōr-t-ī h-ē*  
 wind-PL building break-IPFV-F COP.PRS-PL  
 ‘the winds break a/the building’
- f. *hawā-ē imārat=kō tōr-t-ī h-ē*  
 wind-PL building=OBJ break-IPFV-F COP.PRS-PL  
 ‘the winds break the building’

Outside South Asia, all IA languages show the ACC pattern for grammatical relations. The triggers for DOM are not common in the languages: definiteness in

Domari, pronoun/noun in Lomavren, and both animacy and definiteness in Romani.

Fourth, there is a minor case alignment pattern called ‘transitive’ shown by some IA and Nuristani languages in and around the northern border between Afghanistan and Pakistan. This pattern distinguishes S from A and P: in Dameli (SV/AOV word order), the only argument (S) in intransitive clauses (6a, b) always takes the direct case, while both arguments A and P take the transitive (oblique) case in transitive clause (6c). Certain Iranian languages are famous for this alignment pattern (see Iwasaki’s section on Iranian).

- (6) a. *ai āg-yem*  
 I:DIR come-PST.1SG  
 ‘I came’
- b. *iseg āg-a*  
 s/he.DIST:DIR come-PST.3SG.M  
 ‘he came’
- c. *mū tas yaṇd-ām*  
 I:OBL s/he.DIST:OBL beat-PST.1SG  
 ‘I beat him’

### Abbreviations

1, 2, 3: person, ABS: absolutive, ACC: accusative, COP: copula, DAT: dative, DEF: definite, DIR: direct, DIST: distal, ERG: ergative, F: feminine, GEN: genitive, HON: honorific, IPFV: imperfective, M: masculine, NPST: non-past, OBJ: object / objective case, OBL: oblique, PF: perfect, PL: plural, PLUP: pluperfect, POSS: possessive, PRS: present, PST: past, SG: singular, SP: somatic prefix, SUBJ: subject, VIS: visible,

(YOSHIOKA Noboru)

## ALIGNMENT IN SOUTH ASIA

A1	▽ B3	○ E4
/ A2	▽ BX3	☆ F
\ A3	◇ CX3	⬡ GX3
^ AX3	◇ DX3	

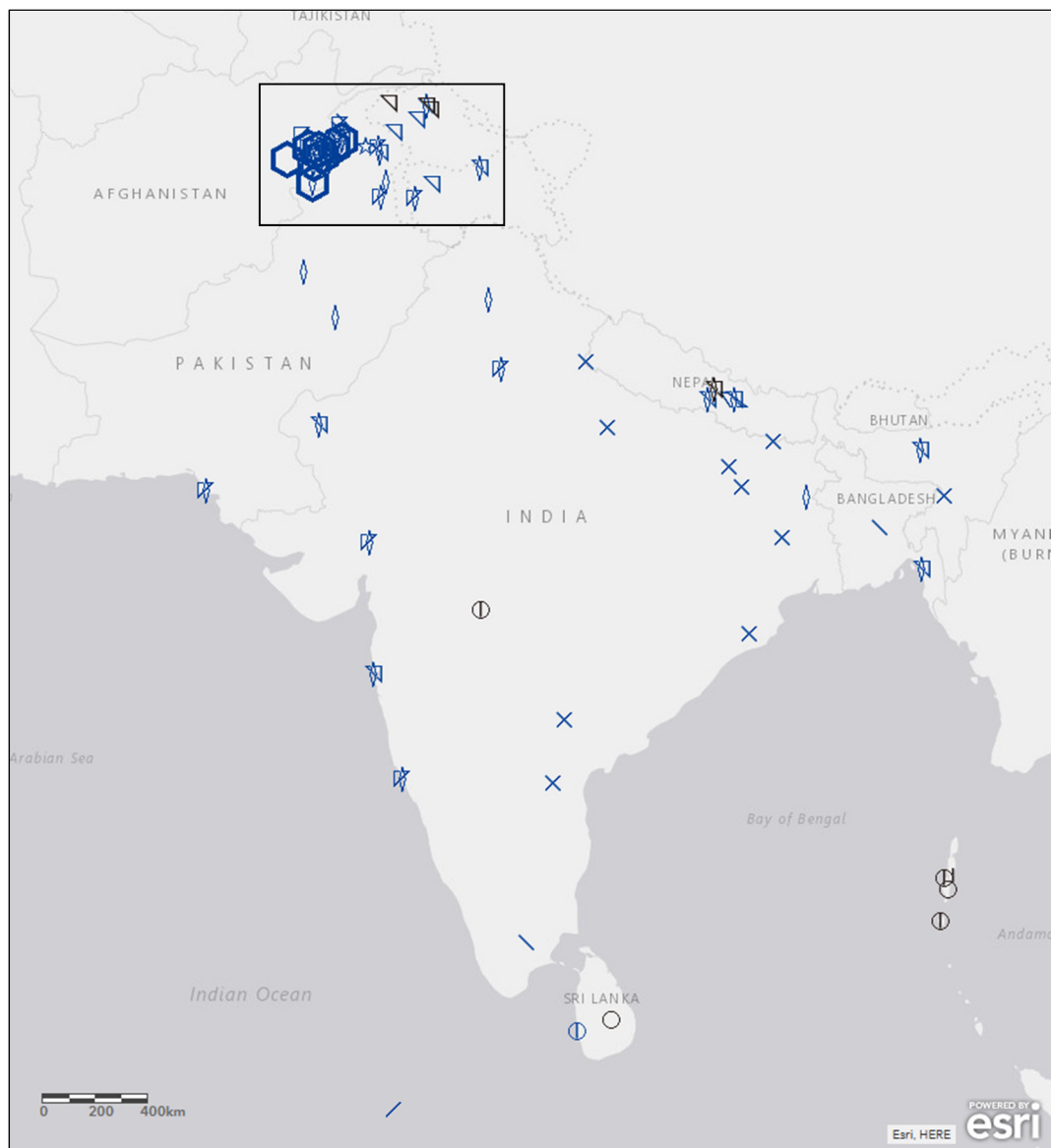


Figure 15.14.1: Types of how to show grammatical relations in Indo-Aryan, Nuristani (both in navy blue), Andamanese, and language isolates (those in black).

## ALIGNMENT IN SOUTH ASIA

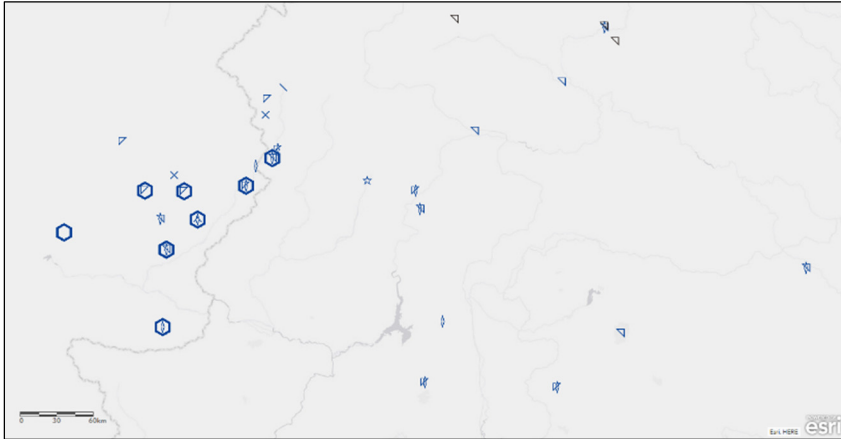


Figure 15.14.2: Types of how to show grammatical relations (enlarged).

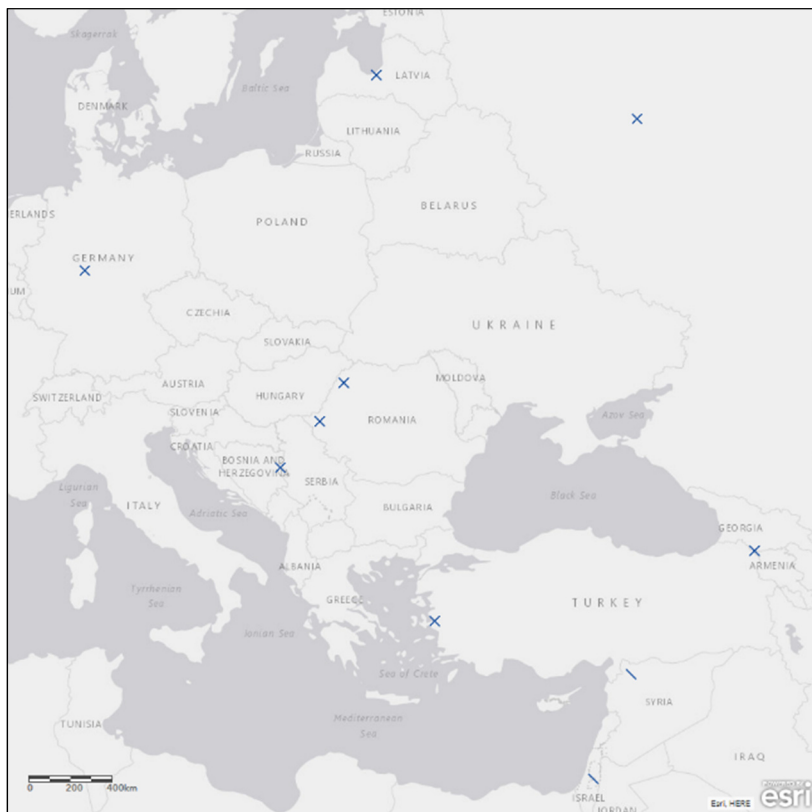


Figure 15.14.3: Types of how to show grammatical relations in Indo-Aryan languages outside South Asia.



## Alignment in Dravidian

### 1. Classification

In this map, all the languages are classified as AS/P alignment type. In all the languages the AS/P alignment is morphologically coded in the case system, and, with a single exception of Malayalam, finite verb forms agreeing with the A or S argument.

A minor split is observed in all the languages. The coding of inanimate P in the oblique case is reported to be optional in most languages, an option for definite or at least specific inanimate nouns. Otherwise, the nominative case covers A, S and P for inanimate nouns and pronouns.

S and A are coded in the nominative as the canonical subject which triggers agreement in the finite verb, except in Malayalam. In most languages, some stative and change-of-state predicates, such as possessives and verbs of emotion, code S and A in an oblique case or in the dative if available. If P of those verbs is coded in the nominative, it may trigger the agreement. Otherwise the finite verb is impersonal and remains in the default form, usually the third person neuter.

Apart from Malayalam, another subclass is characterized by the head marking of P (or other non-S/A argument) in the first or second person, which is a shared innovation in Kui-Kuvi and Pengo-Manda subgroups of South Central Dravidian. Sanford Steever (1993) showed that this innovation is a result of fusion and subsequent grammaticalization of the benefactive construction *V-tar* for the beneficiary in the first or second person.

ex. (Kuvi)

nānu evanāi zīwu=nott-ee.

I(Nom) him(Acc) loved-1sg.A

‘I loved him.’

evasi nānaa zīwu=no-ja-t-esi.

he(Nom) me(Acc) loved-12P-ed-3sg.A

‘He loved me.’

Brahui codes pronominal P in the cliticized pronoun following the host verb like Balochi, the dominant language in the area where Brahui is spoken.

The distinction between the Accusative and the Dative cases is reconstructed for Proto-Dravidian. Some languages appear to have lost the distinction, as is the case with New Indo-Aryan and New Iranian languages.

### 2. Geographical distribution and interpretation

Merger of the Accusative and the Dative is observed in languages and dialects with speaker populations of relatively small size, less than 50,000 in Central and South Central Dravidian, such as Pengo, Manda, Parji, Gadaba, and Gondi dialects spoken in Orissa. All the three languages of so called North Dravidian subgroup, each with more than 100,000 (Malto) or 1,000,000 speakers (Brahui, Kurux), but isolated from other subgroups, seem to have come through some degree of the Accusative/Dative merger. It might be safely assumed that the merger of the two cases is a contact induced change, resulting from extensive bilingualism with New Indo-Aryan or New Iranian. The case



ALIGNMENT IN DRAVIDIAN

system has been susceptible to contact induced changes.

With this in view, the uniformity of Dravidian in regard to the AS/P alignment presented on this map appears to be extraordinary. Split A/SP alignment prevalent in western New Indo-Aryan languages such as Marathi and Hindi as well as New Iranian languages such as Balochi does not seem to have influenced

minority languages such as Kolami, Naiki, Gondi and Brahui. It might be simply that dialect data with A/SP alignment have escaped my attention. Or it may be that A-S-P alignment is more resistant to borrowing than individual cases.

(KODAMA Nozomi)

Double-marking   
Dependent-marking 

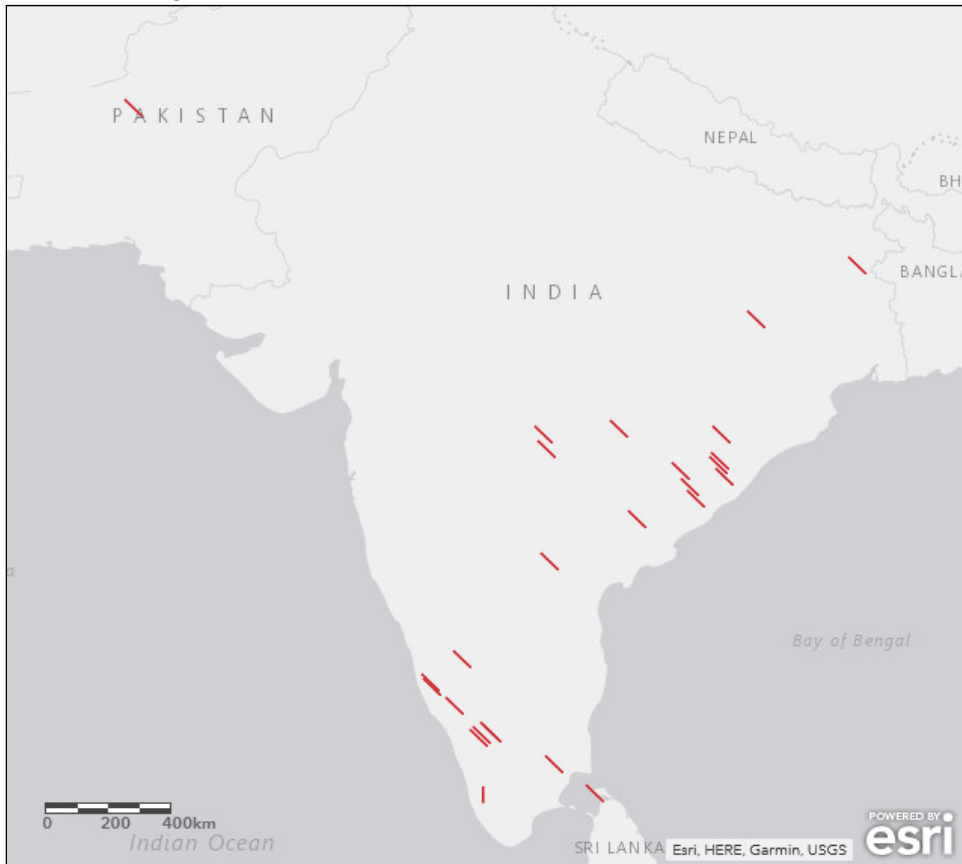


Figure 15.15.1: Alignment in Dravidian.

## Alignment in Iranian

### 1. Classification

Iranian languages show various alignment patterns, most of which are observed only in the Past domain.

There are three important factors in order to determine the alignment in Iranian languages: 1) Split A according to verb stems, 2) DOM (differential object marking), and 3) verbal agreement system.

Generally, a number of Iranian languages display tense-based split ergativity (more precisely, depending on whether the tense forms consist of the present or past stem). Here, following Korn (2008: 249), I refer to the environment in which clauses consist of the present stem as Present domain, and of the past stem as Past domain.

Note that this paper is mainly concerned with the most marked pattern, rather than enumerating their possible types because it is too difficult to classify all the alignment patterns of Iranian languages due to their complex split patterns according to several nominal/verbal features.

As shown below, there are two types of grammatical relations in the Present domain, whereas there are nine patterns in the Past domain.

[Present domain] (Accusative)

A2: Almost all Iranian languages

A3: Almost all Iranian languages

[Past domain]

(Accusative)

A2: Central Kurdish (NW)

A3: Balochi (Western), Persian, Dari, Tajik, Ossetic, Gilaki, Mazandarani, Ishkashimi, Sanglechi, Shugni, Sarykoli, Wakhi (Tajikistan)

(Non-accusative/mixed)

B1: Talysh (Iran, Anbarani and Asalemi)

B2: Ormuri (Pakistan)

B3: Northern Kurdish, Pashto, Zazaki, Gorani, (Probably) Yaghnobi

BX3: Talysh (Northern, Azerbaijan)

DX3: Yazglami, Munji, Prachi, Wakhi (Pakistan)

F: Rushani

G3: Balochi (Eastern, Southern), Talysh (Iran, Masali), Ormuri (Afghanistan)

GX3: Tati (Vafsi)

Also, the DOM system is quite common. Its trigger is specificity, definiteness, animacy and/or noun/pronoun. Interestingly, some languages employ it only in the Present domain. For example, Zazaki falls into this type of DOM. Also, Pashto apparently has DOM considering the case marking in the Present domain (when P is a 1<sup>st</sup> or 2<sup>nd</sup> person pronoun, P is oblique case, if not, direct case). Northern and Central Kurdish totally lack DOM.

All the Iranian languages have head marking systems at least in the Present domain. However, several languages have ergative type agreement in the Past domain. Moreover, not a few languages do not exhibit agreement in transitive sentences in the Past domain, whereas intransitive sentences are obligatorily marked by an agreement marker according to S, thus producing horizontal/transitive alignment pattern (S is marked, while A and P is the equally unmarked, see Yoshioka's section). Some of them also have optional O-

agreement head marking (mostly according to number of O).

In addition, there are some languages in which the head marking and the dependent marking are not the same. For example, Munji has tripartite/ergative dependent marking, while its head marking is always accusative.

Some examples of each type are given below. Note that the intransitive sentences are only shown if necessary since the trigger of the head marking is always S, and S is in the direct (or nominative) case, if any.

#### A2 Central Kurdish

*(pyāw-aka) sag-aka=y kušt.*  
man-DEF dog-DEF=3SG:CLC kill:PST

‘(the man] killed the dog.’

(Mackenzie 1966: 108, glosses added)

#### A3 Persian

*‘Ali Hæsan=ra zad.*  
Ali Hasan=ACC hit:PST:3SG

‘Ali hit Hasan.’

#### B1 Talysh (Iran, Anbaran)

*av-ə fağat bəz vind=e*  
3SG-OB only goat see:PST=TR

‘He saw only (a/the goat)/(goats).’

(Paul 2011: 94, glosses modified)

#### B2 Ormuri (Pakistan)

*afo tyos dyék-ay*  
that:M:SG you:PL see:PST-2PL

‘He saw you.’

(Efimov : 298, glosses added)

#### BX3 Northern Talysh (Azerbaijan, Lerik)

*ramez-i k’amil=iž=æn*  
P.N.-OBL P.N.=3SG:CLC=also  
*pe-gi š-e-0*

PRV-take:PST go-PST-3SG

‘Ramez took Kamil, too, and left.’

(Stilo 2019: 774, glosses modified)

#### B3 Zazaki

*ninan Diler kışt-0*  
they:OB Diler:DI kill:PST-3SG

‘They killed Diler’

(Todd 2008: 101, glosses modified)

#### DX3 Munji

*duzd-āf žiy-āt*  
bandit-PL:OB hit:PST-3PL  
*va=šfəy žə mən*  
ACC=husband:M:DI of I:OB

‘The bandit hit his husband.’

(Grjunberg 1972: 459, glosses added)

#### F Rushani

*Yā wūrj tar dzingāl sut.*  
that:DI wolf to forest go:PST:M  
‘That wolf went to the forest.’

#### (Horizontal)

*way wūrj*  
that:M:SG:OB wolf  
*um žōw xo.*  
that:F:SG:OB cow eat:PST

‘That wolf ate that cow.’

#### (accusative)

*yā wūrj (az)*  
that:M:SG:DI wolf (ACC)  
*um žōw xo.*  
that:F:SG:OB cow eat:PST

‘That wolf ate that cow.’

(tripartite)

<i>way</i>	<i>wūrj</i>	<i>az</i>
that:M:SG:OB	wolf	ACC
<i>um</i>	<i>žōw</i>	<i>xo.</i>
that:F:SG:OB	cow	eat:PST

'That wolf ate that cow.'

G3 Talysh (Iran, Masali)

(...)	<i>šal-i</i>	<i>a-i</i>	<i>bard=a</i>
	jackal-OB	3SG-OB	took=TR

'(...) the jackal took it'

(Paul 2011: 95, modified)

GX3 Vafsi

(Ergative)

<i>in</i>	<i>dār-e</i>	<i>æhmæd-i</i>
this	tree-DI:PL	P.N.-OB:M
<i>par=es</i>	<i>dæ-nnia-nde</i>	
last_year=3SG <sub>2</sub>	PVB-put:PST-3PL <sub>1</sub>	

'Ahmad planted these trees last year.'

(Double oblique)

<i>hærziri</i>	<i>šo</i>	<i>do</i>	<i>dane</i>
yesterday	night	two	CL
<i>kærg-ân=oan</i>	<i>luás-i</i>	<i>yæ-værdæ.</i>	
chicken-OB:PL=1PL	fox-OB:M	PU-bring:PST	

'Last night the fox carried off two of our chickens.'

(Stilo 2019: 776, glosses modified)

## 2. (Geographical) distribution and interpretation

All Iranian languages show accusativity in the Present domain, whereas they exhibit numerous types in the Past domain. Thus, I here principally deal with alignment patterns in the Past domain.

Westernmost languages tend to have ergative alignment whereas northeastern languages tend to be accusative. Languages with optional O-agreement head marking are found in a genetically related Northwest Iranian and controversial Parachi.

In terms of DOM, there are some languages with restricted (or totally lacked) DOM. Such languages tend to show consistent ergative patterns (B3), except for Sorani.

Interestingly, horizontal/transitive and tripartite (S/A/P) alignments are not uncommon in Iranian languages. It may be attributed to the (remnants of) ergative alignment with DOM. These types are found in the Pamir-Hindukush region, central-western Iran, and the southwest of the Caspian Sea.










Rushani shows variety of grammatical relations, namely G3/A3/DX3 in the basic sentences, although the last one is used only by elder generations according to a native speaker.

### Abbreviations

1: 1st person, 2: 2nd person, 3: 3rd person,  
 1: person agreement marker (PAM) clitic1,  
 2: PAMClitic2, ACC: accusative, CL: classifier, CLC: clitic, DEF: definite, DI: direct case, F: female, M: male, OB: oblique case, P.N.: person name, PL: plural, PRV: preverb, PST: past, PU: punctual, SG: singular, TR: transitive.

(IWASAKI Takamasa)

# ALIGNMENT IN IRANIAN

-  A2
-  A3
-  B1
-  B3
-  BX3
-  DX3
-  G3
-  GX3
-  F

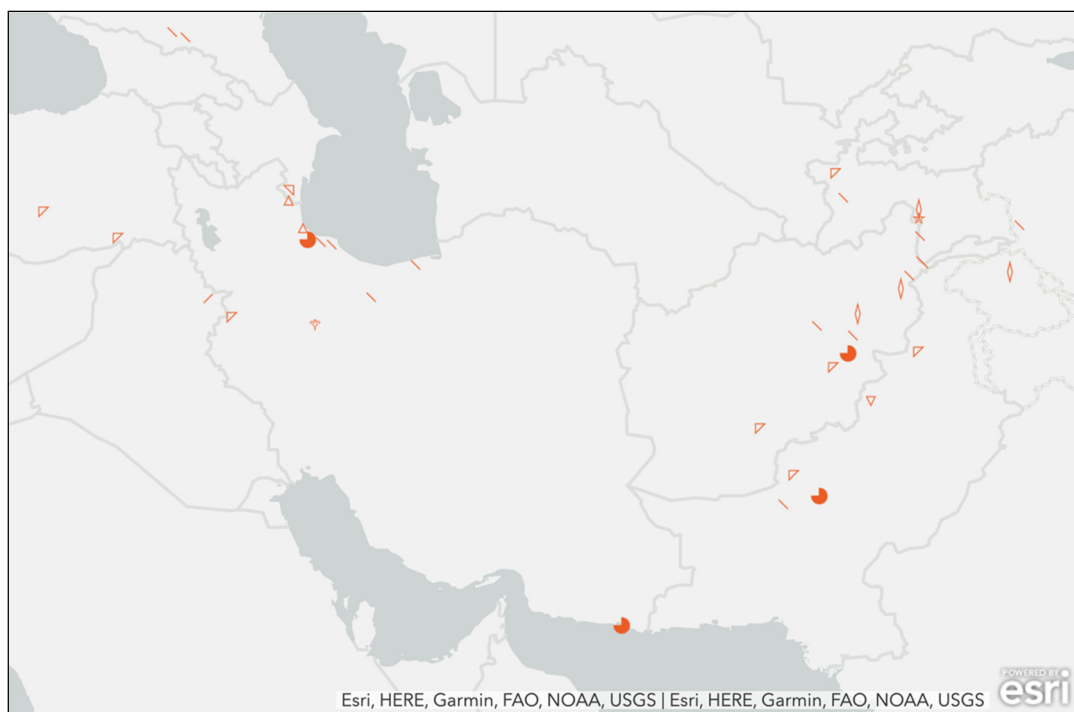


Figure 15.16.1: Alignment in Iranian.

## Alignment in Caucasian languages

### 1. Classification

The Caucasian languages, including Kartvelian, Abkhazo-Adyghean, and Nakho-Daghestanian, exhibits different alignment patterns, which can be classified as follows:

- B1: Ergative-absolutive pattern + dependent-marking
- B2: Ergative-absolutive pattern + head-marking
- B3: Ergative-absolutive pattern + double-marking
- BX3: Ergative-absolutive pattern + double-marking with a conflict between dependent- and head-markings

Kartuli (Georgian; Kartvelian) exhibits the following case marking split based on verb classes and tense-aspectual differences. Based on Aronson's (1989) classification, the verbs fall into four categories: (1) transitive, (2) intransitive for *i*-prefixed passives and *d*-prefixed change-of-state verbs, (3) intransitive for activities and (4) emotion. Table 1 presents a summary of the case marking for Classes 1 and 3:

Table 1: Summary of case marking for Classes 1 and 3 of Kartuli verbs (adapted from Aronson 1989:462).

TA-series	Subject/ Agent	Direct object /Patient	Indirect object
Present/ Future	NOM	dative	DAT
Aorist	ERG	NOM	DAT
Perfect	DAT	NOM	DAT

For Class 2, the single argument is nominative, and the indirect object (if necessary) is dative. For Class 4, the undergoer is dative, and the object is nominative. In summary, Kartuli takes a split-ergative system, in which the ergative appears only in an aorist-series construction of transitive verbs.

Abkhaz (Abkhazo-Adyghean) exhibits the head-marking type for grammatical relations (Klychev & Chkadua 1999). Nouns have no inflection, while verbs have a highly complex marking system of morphology, including a series of markings presenting grammatical relations (Hewitt 2010).

Forker (2020:373-402) describes a complete picture of the agreement system of Sanzhi Dargwa (Nakho-Daghestanian). This language has agreement for number (singular and plural), gender (masculine, feminine, and neuter), and person (1st, 2nd, and 3rd). In verb morphology, the marking depends on the TAM forms.

In many languages that take Type B3, head-marking corresponds to a class of nouns that can function as a "subject", that is, a single argument or agent. Distinctions between the classes vary across languages.

### 2. Geographical distribution

Map 15.17.1 shows that the types of grammatical relations in the three language families vary. Kartvelian languages exhibit Type BX3, which is widely attested in the Caucasus. Then, Type B2 is dominant in Abkhazo-Adyghean languages, whereas Type B3 is prominent in Nakho-

ALIGNMENT IN CAUCASIAN LANGUAGES

Daghestanian languages, of which Nakh languages (Chechen and Ingush) exhibit Type B1.

(SUZUKI Hiroyuki)

- △ B1
- ▽ B2
- ▽ B3
- BX3

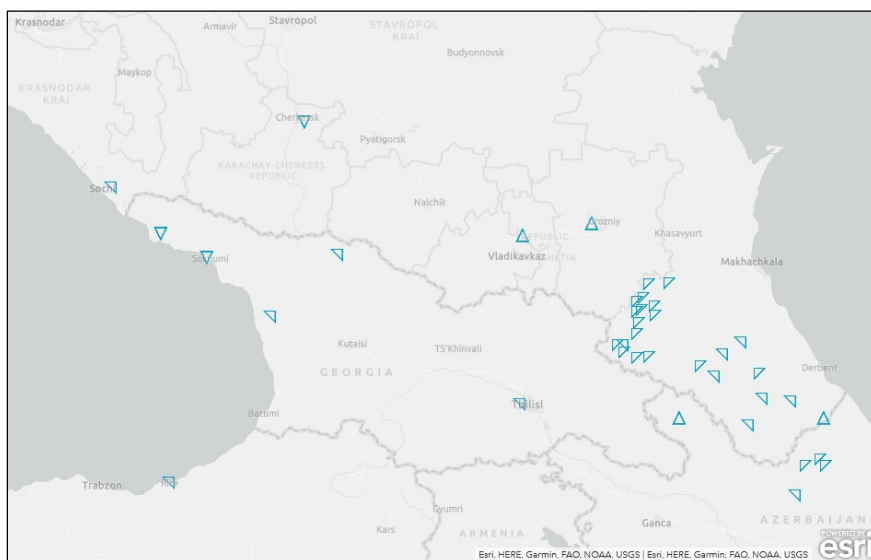


Figure 15.17.1: Alignment in Caucasian languages.



## Alignment in Semitic

### Classification of grammatical relations

Semitic languages are, in general, Nominative-accusative type (AS/P). And most of them have SVO word order, although Ethiopian Semitic and some peripheral Arabic dialects have SOV order. The Grammatical relations of Semitic are classified as follows.

A2 (Head-marking): A or S is marked on V by the conjugation. P is marked only by word order.

A3 (Double-marking): A or S is marked on V by the conjugation. P is marked on the noun by a preposition or both on the noun by a preposition and on V by a pronominal suffix.

A2/A3: A or S is marked on V by the conjugation and P or both P and V are marked when P is a personal noun or a definite.

A4 (No marking): V has no conjugation.

### Geographical distribution and interpretation

#### 1. A2

A2 is the most widely spread type in Semitic. Most of Arabic dialects are A2.

Egyptian Arabic:

*ha:ni fa:f meħammed.*

[Hani saw.3RD.M.SG. Muhammad]

‘Hani saw Muhammad.’

South Arabian languages have SVO order with no marking on P. There is also the observation that the neutral word order of Soqotri is VSO.

Soqotri: (Kogan & Bulakh 2019: 304)

*fəlʕos ʕag ʔoben be-maʕval.*

[broke man stone INS-hammer]

‘A man broke up a stone with a hammer.’

#### 2. A2/A3

In Syrian Arabic, when P is a person, P is marked by a preposition and V by a personal pronominal suffix referencing to P.

Syrian Arabic: (Brustad 2000: 354)

*fuft-u la mħammad.*

[saw.1ST.SG.-him DAT Muhammad]

‘I saw Muhammad.’

In Cypriot and Maltese, P is marked by the dative preposition, when P is definite in Cypriot, and when P is a person in Maltese. In Maltese it maybe because of the contact with the Romance languages.

Cypriot Arabic: (Borg 1985: 138)

*kifta rkáʕat l-óxtak*

[why hit.PST.2SG DAT sister-your]

‘Why did you hit your sister?’

Maltese (Borg and Azzopardi-Alexander 1997: 277)

*Rat li t-tifel ta hu-k.*

[saw.3RD.F.SG. DAT the-boy of brother-your]

‘She saw your brother’s son.’

Northwest Semitic languages also have SVO word order. In Hebrew, P is marked by the accusative preposition *et* when P is definite.

Modern Hebrew:

*ani kore et ha-sefer.*

[I read.M.SG. ACC the- book]

‘I read the book’.

**3. A3**

In Çukurova Arabic (south Turkey, adjacent to Syria) P marking is highly generalised.

Çukurova Arabic: (Procházka 2002: 158)

*illēli fiḡt-a la-Fa:ṭma.*

[today saw.1ST.SG.-her DAT-Fatima]

‘Today I saw Fatima.’

Uzbekistan Arabic, in contact with Turkic and Iranian languages, has SOV order and both S is indicated by conjugation of V, and P by a prefix *i-* and V by a pronominal suffix referencing to P (A3).

Uzbekistan Arabic: (Jastrow 2005: 136)

*i-xaṭīb dʒa:bt-u.*

[ACC-mollah brought.3RD.F.SG.-him]

‘She brought the mollah.’

In North-Eastern Neo-Aramaic, in the boarder region between Turkey, Iraq and Iran, both AS and P are marked on V by suffix.

Jewish Sanandaj: (Doron and Khan 2010: 3)

*baxt-āke barux-āwal-i garš-ā-lu.*

[woman-the friend-PL-my pull-NOM.3FS-DAT.3PL.]

‘The woman pulls my friends.’

Ethiopian languages have SOV order. V agrees with S. Usually P is not marked but when P is definite, P or both P and V are marked.

In Tigrinya P is marked.

Tigrinya: (/wiki/tigrinya\_language,21.3.28)

*ḡag<sup>w</sup>äs nə-’almaz rāxibuwwa*

[Hagos ACC- Almaz met]

‘Hagos met Almaz’

In Amharic P is marked by ACC suffix *-n* and V by a personal pronominal suffix.

Amharic: (Wakasa 2018:40)

*lədʒu-n əndet agəṅṅāf-əu.*

[child-ACC how found-him]

‘How did you find the child?’

**4. A4**

Some Arabic peripheral dialects, in which the conjugation has lost, are A4.

Juba Arabic: (Nakao 2017:194)

*ána dūgu nerekūk.*

[I hit child]

‘I hit a/the child.’

Nubi in Kenya: (Heine 1982:29)

*mária ááínú nyerekú.*

[woman saw child]

‘The woman saw the child’

**Abbreviations**

1ST, 3RD: person, M: masculine, F: feminine, SG: singular, PL: plural, NOM: nominal, ACC: accusative, DAT: dative, INS: instrumental, PST: past.

(NAGATO Youichi)

- / A2. Head-marking
- \ A3. Double-marking
- × A2/A3
- A4. No marking

ALIGNMENT IN SEMITIC



Figure 15.18.1: Alignment in Semitic.

## Alignment in Nilo-Saharan

### 1. Classification

On this map, Nilo-Saharan languages are classified as consisting of 18 types:

Simple patterns

- A1 AS/P dependent-marking
- A2 AS/P head-marking
- A3 AS/P double-marking
- A4 AS/P no-marking  
(including optional head-marking)
- G1 ‘bidirectional’ dependent-marking

Complex double-marking patterns

- AX3 AS/P double-marking  
and A/SP head-marking
- BX3 A/SP dependent-marking (optional)  
and S1/S2 head-marking
- DX3 A/S/P head-marking (optional)  
and AS/P dependent-marking
- ‘No case before the verb’ split patterns
- A1/A4e AS/P dependent-marking  
(postverbal A/S) and AS/P no-  
marking (preverbal A/S)
- A2/A3e AS/P double-marking  
(postverbal A/S) and AS/P head-  
marking (preverbal A/S)
- A3/A4e AS/P double-marking  
(postverbal A/S) and AS/P no-  
marking (preverbal A/S)
- A4/B3e AS/P double-marking  
(postverbal A/S) and AS/P no-  
marking (preverbal A/S)
- F complex split

The other major split patterns

- A1/A4g limited use of case markers
- A1/E1g AS/P, neutralized in certain  
clause types
- B2/A2d indefinite patient as anti-passive  
adjunct

- BX3/A3c AS/P double-marking (topic  
A/S) and A/SP double-marking  
(non-topic A)

### 2. Geographical distribution and interpretation

Nilo-Saharan languages exhibit great diversity and complexity of the morphosyntactic systems for coding grammatical relations, which made them the main phylum of African languages extensively surveyed by König (2008) and thereafter has been the theme of an ever-increasing number of typological studies. While the majority of Nilo-Saharan has an AS/P system, a significant number of languages exhibit a partial ergative, active, tripartite or neutral system combined with another one. To simplify our argument, here we omit the splits based on ‘optional’ case marking and the noun/pronoun split (cf. Dimmendaal 2010).

Types A1, A2, A3 and A4 represent the simplest systems found among Nilo-Saharan. A1 is extremely rare (only Chabu, probably a language isolate), but A2, A3 and A4 are widely distributed (although further in-depth descriptive studies may reveal that they are more complex). Most A3 languages have unmarked nominative and marked accusative, except for Sinyar (Central Sudanic) with marked nominative plus marginal accusative for non-common nouns and Nara (Eastern Sudanic) with ‘optional’ nominative and accusative markers. Most A4 languages have <A V P> order, but Deiga (Kadu) has <V A P> and Central Sudanic languages like Avokaya use both <A V P> and <A P V> according

to the tense-aspect. Some A4 languages may have optional AS/P type cross-reference (under certain conditions).

- (1) A1, Chabu (isolate)  
 dɛpɛ ufa-ka-k                      ka-je  
 lion person-ACC-AUX kill-PAST  
 ‘Lion killed a person.’  
 (adapted from Kibebe 2015: 311)
- (2) A2, Kumam (Western Nilotic)  
 ɪcúɔ ɔ=ted-o                      cáɱ  
 man 3SG/PL=PERF:cook-TR food  
 ‘The man cooked food.’  
 (adapted from Hieda 2013: 42)
- (3) A3, Kenuzi (Nubian)  
 sa:b ka:re-g kal-s-u  
 cat fish-ACC eat-PAST-3SG  
 ‘The cat ate the fish.’  
 (adapted from Abdel-Hafiz 1988: 201)
- (4) A3, Sinyar (Central Sudanic)  
 a. ngùbbò-n                      tèll<sup>+</sup>è  
 old.woman-NOM.SG 3:twist:PAST  
 kwàrjà  
 polenta  
 ‘The old woman prepared polenta.’  
 (adapted from Boyeldieu 2015: 24)  
 b. nàmúró-n                      ámbóngá<sup>+</sup>à  
 Spider-NOM.SG 3:visit:PAST  
 míndéélè-ngàá  
 Rat-ACC:PL  
 ‘Spider has paid a visit to Rat’s family.’  
 (adapted from Boyeldieu 2015: 27)
- (5) A4, Kwegu (Surmic)  
 kieni ind-aʔa biwa  
 dog bite-PERF cat  
 ‘The dog bit the cat.’  
 (adapted from Inui 2014: 34)

- (6) A4, Deiga (Kadu)  
 dìnò nìmyá dī àssók  
 PFV:see woman house yesterday  
 ‘The woman saw the house yesterday’  
 (adapted from Reh 1994: 225)
- (7) A4, Avokaya (Central Sudanic)  
 a. gólā lǎrí cò-’ā  
 he drum beat-IPFV  
 ‘He is beating a drum.’  
 (adapted from Callinan 1984: 52)  
 b. àǰú gā Wílàmò Ákimò rī  
 spear stab Wilamo Akimo LINK  
 drí trá  
 hand PAST  
 ‘A spear stabbed Wilamo Akimo’s hand.’  
 (adapted from Callinan 1984: 54)

Type G1 is based on Heath’s (2007) analysis of *na* in Songhay languages as a ‘bidirectional’ case marking, which appears only between A and P <A *na* P V> but not in intransitive clauses <S V>. The slot for *na* between A and P is usually filled with modality, aspect and negation markers, but *na* is a semantically empty morpheme that only codes the boundary of A and P. As such, this type would otherwise be categorized as A4.

- (8) G1, Koyraboro Senni (Songhay)  
 har-oo                      na hǎyš-oo kar  
 man-DEF.SG TR dog-DEF.SG hit  
 ‘The man hit the dog.’  
 (adapted from Heath 2007: 91)

AX3, BX3 and DX3 types combine two different alignment systems. Recent studies have revealed that Nyimang and several Nubian languages have accusative (AS/P)

case marking in addition to AS/P person and A/SP number cross-references (AX3), Beria has A/SP case(-cum-focus) marking and S1/S2 (active/inactive) cross-reference (BX3), and Kanuri (Saharan) has tripartite (or idiolectally S1/S2) case marking and AS/P type cross-reference (DX3 (or CX3)).

## (9) AX3, Nobiin (Nubian)

- a. ay tii-ga aag jurr-il  
1SG cow-ACC CONT milk-1SG  
'I am milking the cow.'
- b. ay tii-guu-ga aag  
1SG cow-PL-ACC CONT  
jurr-ij-il  
milk-PL-PRES.1SG  
'I am milking the cows.'
- (adapted from Khalil 2015: 64)

## (10) BX3, Beria (Saharan)

- a. biè kí=dí ábā éǵí=gú  
house this=ABS:FOC father my=ERG:FOC  
Ø-sí-é-r-î  
3.OBJ-build-PFV:3-3.SBJ-PFV  
'It's this house that my father has built.'
- (adapted from Jakobi 2006: 138)
- b. áĩ=dí kí è-g-ì  
1SG=ABS:FOC leave AUX-1SG.SBJ-PFV  
'It's me who will leave.'
- (adapted from Jakobi 2006: 137)
- c. áĩ=dí é-gédé-Ø-ì  
1SG=ABS:FOC 1SG.OBJ-fall-3.SBJ-PFV  
'It's me who has fallen.'
- (adapted from Jakobi 2006: 137)

## (11) DX3 (CX3), Kanuri (Saharan)

- a. músà-yè kóri-kà baksónà  
Musa-NOM dog-ACC beat:PERF:3SG  
'Musa has beaten the dog.'
- (adapted from Cyffer 1983: 195)

- b. áli(\*-yè) bák̄t̄in  
Ali(-nom) beat:PASS:3SG  
'Ali will be beaten.'
- (adapted from Cyffer 1983: 193)
- c. áli(?-yè) kánò-rò lèj̄in  
Ali(-NOM) Kano-DAT travel:3SG  
'Ali travels to Kano.'
- (adapted from Cyffer 1983: 194)

Types A1/A4e, A2/A3e and A3/A4e represent a type of marked nominative system commonly found among East African Nilo-Saharan languages, where the nominative case is assigned only to postverbal subjects (PVS, i.e., non-topic/focus). For example, Akie (Southern Nilotic) has <V A/S-NOM (P)> and <A/S V (P)> (A1/A4e), Murle (Surmic) and Turkana (Eastern Nilotic) has <V-A/S A/S-NOM (P/X)> (X: adjunct) and <A/S V-A/S (P)> (A2/A3e) where the word order does not affect the verbal form.

## (12) A1/A4e, Akie (Southern Nilotic)

- a. ká kii nyím-chi láákwee  
PERF R.PAST show-DAT child  
mesééree kwáan.  
baobab father:NOM
- b. kwaan ká kii nyím-chi  
father PERF R.PAST show-DAT  
láákwee mesééree  
child baobab  
'Father has shown the child the baobab (long ago).'
- (adapted from König, Heine & Legère 2015 30)

## (13) A2/A3e, Murle (Surmic)

- a. kir̄eer a-cin oroz  
jackal 3SG-see dog  
'The jackal sees the dog.'

- b. a-cin kireer-i oroz  
 3SG-see jackal-NOM.SG dog  
 ‘The jackal sees the dog.’  
 (adapted from Arensen 1982: 52)

On the other hand, Dinka (Western Nilotic) and Berta have <A/S V P/X> and <P/X V.PVS A/S.NOM> (A3/A4e) where the verbal form changes according to word order, superficially resembling the ‘Philippine-type’ pivot systems.

- (14) A3/A4e, Berta (Eastern Sudanic)
- a. θálé ηinéη sí: álbum  
 there FOC exist coffee:NOM  
 ‘There is [(the) coffee]<sub>FOC</sub>.’
- b. albún sí:-ʔí θálé  
 coffee exist-DJ there  
 ‘[The coffee]<sub>TOP</sub> is there.’
- c. alʔustâ:s ʃap’úθ-ó:(-lá) átt’a:lib  
 teacher hit-PAST-PVS student:NOM  
 ‘[The teacher]<sub>TOP</sub>, the student hit.’
- d. alʔustâ:s ηinéη  
 teacher FOC  
 ʃap’úθ-ó:(-lá) átt’a:lib  
 hit-PAST-PVS student:NOM  
 ‘The student hit [the teacher]<sub>FOC</sub>.’
- e. att’á:lib ʃap’úθ-ó: alʔustâ:s  
 student hit-PAST teacher  
 ‘[The student]<sub>TOP</sub> hit the teacher.’
- f. att’á:lib ηinéη ʃap’úθ-ó: alʔustâ:s  
 student FOC hit-PAST teacher  
 ‘[The student]<sub>FOC</sub> hit the teacher.’  
 (Nakao, field data)

The preverbal slot usually codes the syntactic topic/focus or is filled by (e.g., adverbial, relative) clause markers. This feature, dubbed ‘no case before the verb’ in the literature, has been attested across the Nilo-Saharan, Afroasiatic and Niger-Congo

phyla (König 2008). Among this type, Tennet (Surmic) is the only language that marks the preverbal subject by the nominative case, although the preverbal subject focalized by clefting is unmarked (i.e., A1/A4e, König 2008).

Type A4/B3e is attested only by Gaam (Eastern Jebel), which has <S V> vs. <A V P> and <P V-ERG A-ERG> like A3/A4e, but, according to Stirz (2014), S does not occur postverbally (except for the subject of the antipassive sentence). Although Uduk (Koman) has almost the same distribution, it can be categorized as A1/A4e since it allows postverbal S when a certain dependent clause marker fills the preverbal slot (Killian 2015).

- (15) A4/B3e, Gaam (Eastern Jebel)
- a. kāsán ǰáósó nāms  
 boy:DEF need:PFV food  
 ‘The boy needed food.’
- b. nāms ǰáós=ē kásàn  
 food need:PFV=ERG boy:DEF:ERG  
 ‘Food the boy needed.’  
 (adapted from Stirz 2014: 246)

Type F represents the complex systems represented by Northern Lwo languages (Western Nilotic). For example, Pāri has <S V> vs. <P V A-NOM> (16a), in addition to <A P V-A> (16b), <A V-AP (PREP P)> (AP: antipassive; P is coded as an adjunct) (16c), <P V-FOC A-NOM> (FOC: focus the postverbal element) (16d), <A V-FOC P> (16e), etc. Like Uduk, these languages have postverbal S only in some marginal (e.g., dependent) clauses or sentence types. Uduk and Type F languages may as well be labelled ‘(split) ergative’ due to these facts (Andersen 1988, Killian 2015). As for

Anywa, closely related to Pāri, Reh (1996) alternatively describes it as a postverbal ‘definite’ (subject) marker, but here we simply analyze it as a marked nominative.

## (16) F, Pāri (Western Nilotic)

a. jòobì á-kèel ùburr-ì  
buffalo PFV-shoot Ubur-NOM  
‘Ubur shot the buffalo.’  
(adapted from Andersen 1988: 293)

b. ùbúr jòobì á-kèel-é  
Ubur buffalo PFV-shoot-3SG  
‘[Ubur]<sub>TOP</sub> shot the buffalo.’  
(adapted from Andersen 1988: 294)

c. wìj à-càmbò kí béel  
birds PFV-eat:AND:AP PREP grain  
‘The birds ate the grain.’  
(adapted from Andersen 1988: 303,  
unknown function)

d. lùum wáaŋ-à còww-ì  
grass burn-FOC men-NOM  
‘[The men]<sub>FOC</sub> burnt the grass.’  
(adapted from Andersen 1988: 308)

e. còww wáaŋ-à lùum  
men burn-FOC grass  
‘The men burnt [the grass]<sub>FOC</sub>.’  
(adapted from Andersen 1988: 308)

The other types of major split include what follows:

Type A1/A4g is attested only by Keliko (Central Sudanic) which has nominative and accusative case markers only in some specific situations (e.g., subject in certain types of relative clause, proper noun object).

## (17) A1/A4g, Keliko (Central Sudanic)

a. ìmi pētì rī ga  
2PL tree DEF cut  
‘you.PL cut.IPFV the tree’  
(adapted from Waag 2018: 194)

b. 'bētí ìmi ní  
home 2PL NOM  
ca-zú rī gé rī  
arrive-REL DEF at DEF  
‘the home at which you arrive’  
(adapted from Waag 2018: 195)

c. pē-kí ũzuku ri  
send-PL Porcupine ACC  
mụ-ú ìri zì-í  
go-DEP 3SG call-DEP  
‘Porcupine was sent to call for him.’  
(adapted from Waag 2018: 196)

Type A1/E1g is attested only by Ik (Kuliak), whose nominative, accusative and oblique cases are functionally neutralized in certain clause types (in parallel with languages like Classical Arabic).

## (18) A1/E1g, Ik (Kuliak)

a. en-es-uḡót-a wík-á  
see-IRR-AND-SUF children-NOM  
njíní-k<sup>a</sup>  
we.INCL-ACC  
‘The children will see us.INCL.’  
(adapted from König 2008: 74,  
A-NOM, P-ACC)

b. bi-á ḡa-ée sab-ée  
2SG-NOM go-IMP.2SG kill-IMP.2SG  
loḡót<sup>a</sup>  
enemies.OBL  
‘(You) go and kill enemies!’  
(adapted from König 2008: 75,  
A-NOM, P-OBL)

c. wík-a ñc-i  
children-NOM 1SG-GEN  
en-a ná ñts-<sup>a</sup>  
see-SUF ENC he-NOM  
‘As for my children, he sees (them).’  
(adapted from König 2008: 74,  
A-NOM, P-NOM)



d. na nci-a en-í-ik<sup>e</sup>  
 when 1SG-ACC see-1SG-SBJV  
 wicé-k<sup>a</sup> gō-i-ak<sup>o</sup>.  
 children-ACC go-1SG-NAR  
 ‘When I see the children, I go.’  
 (adapted from König 2008: 75,  
 A-ACC, P-ACC)

e. en-é bi wíce.  
 see-IMP.2SG 2SG.OBL children.OBL  
 ‘(You) see the children!’  
 (adapted from König 2008: 75,  
 A-OBL, P-OBL)

Type A2/B2d is attested by Jumjum and Mabaan (Southern Burun, Western Nilotic), where definite P is coded by ergative word order <P V A> or <A P V> (vs. <S V>), but indefinite P is coded as an adjunct of an antipassive clause <A V-AP P> (cf. (16c)).

(19) B2/A2d, Mabaan (Western Nilotic)

- a. càan kòrà júuarǵé  
 Caan Koora see:PAST:3SG:3  
 ‘Caan saw Koora.’  
 (adapted from Andersen 1999: 500)
- b. kòrà júuarǵé càan  
 Koora see:PAST:3SG:3 Caan  
 ‘Caan saw Koora.’  
 (adapted from Andersen 1999: 500)
- c. càan ʔámé jâŋǵà  
 Caan eat:AP:PAST:3SG meat  
 ‘Caan ate meat.’  
 (adapted from Andersen 1999: 505)

Type BX3/A3c is attested only by Majang (Surmic), where sentences with non-topic subjects <V-A A-ERG P> (20a) and <V-S S> (20b) have A/SP case marking and AS/P cross-reference but sentences with topicalized subjects <V-A A-NOM P>

(20c) and <V-S S-NOM> (20d) have AS/P double-marking.

(20) BX3/A3c, Majang (Surmic)

- a. kàw-é wâr ídíť  
 bite-3SG.DJ dog:SG.ERG man:SG.ABS  
 ‘A dog bites a man.’  
 (adapted from Joswig 2019: 49)
- c. dě:gàr wâr kékàr  
 sleep:3SG.CJ dog:SG.ABS again  
 ‘A dog sleeps again.’  
 (adapted from Joswig 2019: 49)
- b. kàw-é wâr ídíť  
 bite-3SG.DJ dog:SG.NOM man:SG.ABS  
 ‘[The dog]<sub>TOP</sub> bites a man.’  
 (adapted from Joswig 2019: 50)
- d. dě:gàr wâr kékàr  
 sleep:3SG.DJ dog:SG.NOM again  
 ‘[The dog]<sub>TOP</sub> sleeps again.’  
 (adapted from Joswig 2019: 50)

Historically, the accusative markers *-k*, *-g*, *-ka*, *-ga*, *-ko*, *-go*, *-o* found in Types A1, A3, AX3 and DX3 (CX3) (Chabu, Nubian, Nyimang, Nara, Saharan, Mabaan) may share the same origin. On the other hand, Fur and Kunama share the accusative(-cum-dative) marker *-si*, but their historical relationship remains understudied. There is a debate over the historical relationship of the ergative/nominative/genitive markers *-i*, *-e*, *-ye* found in A1/A4e, A2/A3e, A4/B3e, BX3, DX3 and F (Nilotic, Surmic, Eastern Jebel, Saharan and possibly Nobiin and Old Nubian), but it remains unclear (cf. Ehret 2001; König 2008; Dimmendaal 2014; Dimmendaal et al. 2019). Also note that some Afroasiatic (Semitic, Cushitic and Omotic) languages have the nominative and/or genitive marker *-i*. Some Type A1/A4e languages (i.e., Nilotic, Surmic and

Berta, which are among the southern branch of the Eastern Sudanic languages) code the marked nominative case only or mainly by tone. This feature is also attested in some Cushitic and Omotic languages, such as Somali and thus it could be an areal feature (König 2008).

### Abbreviations

1, 2, 3: person, ABS: absolutive, ACC: accusative, AND: andative, AP: antipassive, AUX: auxiliary verb, CJ: conjoint, CONT: continuous, DAT: dative, DEF: definite, DEP:

dependent clause verb form, DJ: disjoint, ENC: enclitic, ERG: ergative, FOC: focus, IMP: imperative, INCL: inclusive, IPFV: imperfective, LINK: linker, NAR: narrative, NOM: nominative, OBJ: object, PAST: past, PERF: perfect, PFV: perfective/completive, PL: plural, PRES: present, PVS: post-verbal subject, REL: relative clause marker, R.PAST: remote past, SBJ: subject, SBJV: subjunctive, SUF: suffix, SG: singular, TOP: topic, TR: transitivity marking.

(NAKAO Shuichiro)

A1		A3	∖	BX3	▽
A1/A4e	+	A3/A4e	×	DX3	◇
A1/A4g	†	BX3/A3	∇	F	☆
A1/E1g	⊕	AX3	^	G1	✧
A2	/	A4	—		
A2/A3e	×	A4/B3	⊞		
B2/A2d	∇				

ALIGNMENT IN NILO-SAHARAN

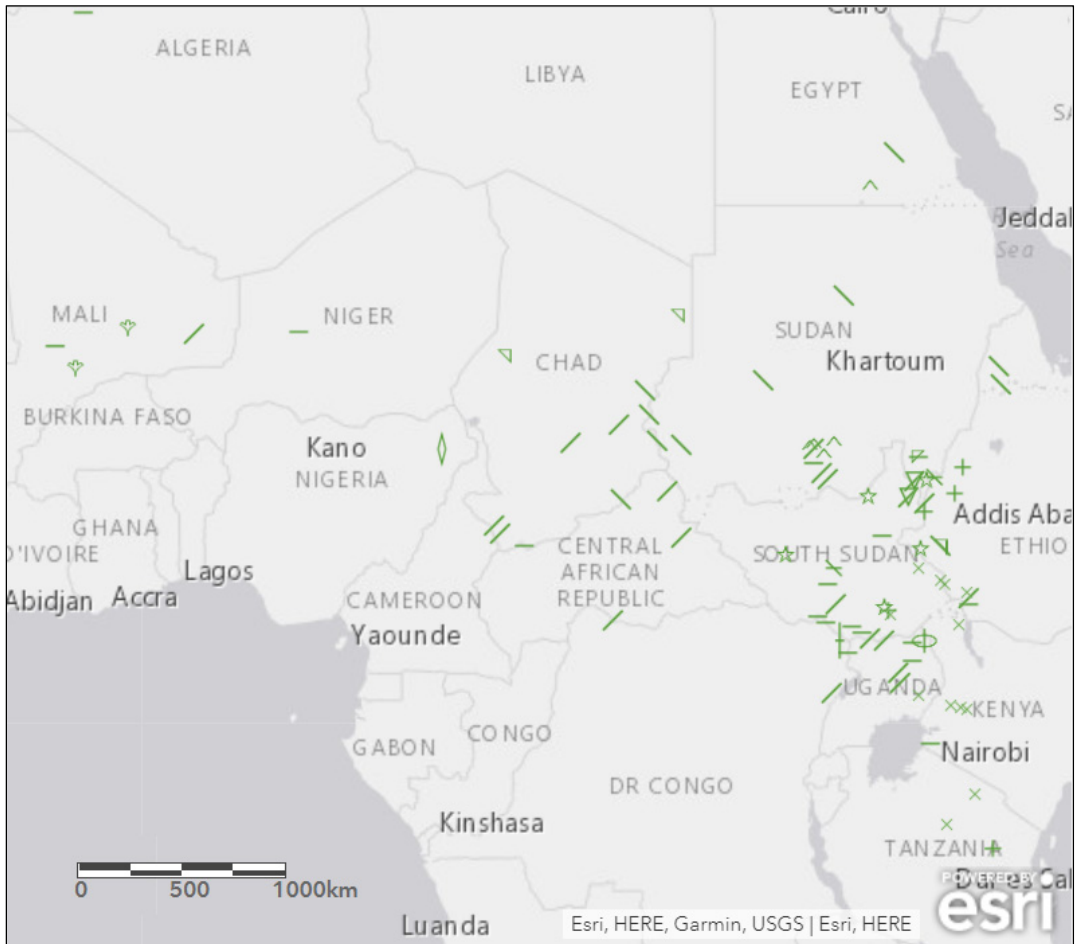


Figure 15.19.1: Alignment in Nilo-Saharan.

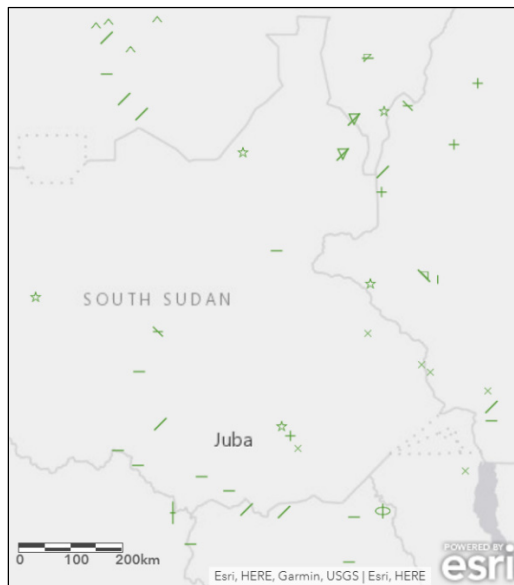


Figure 15.19.2: Nilo-Saharan in and around South Sudan.

## Alignment in Niger-Congo

### 1. Classification

As is widely accepted in the literature, a general tendency of African languages is that the grammatical relations (GR) such as the subject and the object tend not to be expressed through case marking morphology. This especially applies to the Niger-Congo phylum including Bantu languages (cf. Creissels 2000, van der Wal 2015). It is also well known that while western Niger-Congo languages, including western Bantu languages (especially zones A and B in Guthrie's (1967–71) classification), tend to have analytic morphology, synthetic morphology is the norm of the most (non-western) Bantu languages. Reflecting on the structural tendencies, case marking patterns in Niger-Congo languages are generally classified into two categories, namely i) no marking in analytic languages, and ii) head marking in synthetic languages, as illustrated in (1) from Kisi and (2) from Swahili, respectively.

(1) Kisi [Atlantic; Southern Mel]

**sàà sàà sàá**

Saa grab sheep

'Saa grabs the sheep' (Childs 1995:43)

(2) Swahili [Benue-Congo; Bantu E]

**sisí tu-li-mw-on-a**

PRON.1PL SM1PL-PST-OM1-see-IND

'We saw him/her'

Moreover, as a typical head marking type, subject and object agreement are marked in designated slots in the morphological template of the verb (glossed as SM and

OM in (2)). While the markers agree in person, number and the noun class of referent nominals, they do not indicate case distinction. This makes the (positional marking of) nominative-accusative the only possible case alignment pattern, i.e., the typology of GR marking in Niger-Congo can be quite simple and uniform. However, more fine-grained classifications can be provided when we include intermediate types in the synthetic–analytic scale, as well as relevant features that may affect the regularity of the system of GR marking. The following three parameters can be set up to examine the internal variety of GR expressions in Niger-Congo.

Parameter 1 (P1): Structural synthesis

Synthetic vs. Synthetic-minus-OM vs. Analytic-plus-OM vs. Analytic

Parameter-2 (P2): Topic sensitivity of SM

Subject prominent vs. Topic prominent

Parameter-3 (P3): OM plurality and order restriction

Presence vs. Absence of external restrictions to object marking, e.g. animacy restrictions on the sequential OMs (i.e., OM plurality is grammatically acceptable only when both OMs agree with an animate noun class) as illustrated in the following example (6).

Based on these parameters, the possible subcategorizations of GR marking in Niger-Congo are classified as follows.

A4: No marking (Analytic) [14 languages]

See example (1)

A4': Only Object can be head-marked

(Analytic [+OM]) [2 lgs]

(3) Ijo [Ijoid; East Ijo]

**ɔmmí [wó- kamɔ-mí]**

SUBJ.3PL OM1PL-entertain-FAC

**wó warí la-mɔ**

SUBJ.1PL house reach-when

'They entertained us as soon as we reached the house.' (Nurse 2016: 165)

A2': Only Subject can be head-marked

(Synthetic [-OM]) [7 lgs]

(4) Jukun [Benue-Congo; Jukunoid]

**[i-tà-ř- waa] naa**

SM1PL-NEG-IPFV-drink PROG

**zaapàr mɔ̀**

water NEG

'We are not drinking water' (Nurse 2016: 177)

A2: Head marking (Synthetic) [57 lgs]

See example (2)

A2c: Topic-sensitive SM (Synthetic) [12 lgs]

(5) Rwanda [Benue-Congo; Bantu JD]

**igitabo ki-som-a umuhuungu**

7.book SM7-read-ASP 1.boy

'[The boy]<sub>FOC</sub> is reading [the book]<sub>TOP</sub>'  
(Morimoto 2006: 163)

A2'c: Topic-sensitive SM (Synthetic [-OM]) [0]

A2x: Object marking with external restrictions (Synthetic) [27 lgs]

(9) Bemba [Benue-Congo; Bantu M]

a. \***N-àlíí-mù-yà-péél-à**

SM1SG-PST-OM1-OM6-give-IND

Intd.: 'I gave him it (e.g. water).'

b. **mù-kà-bá-mú-éb-él-á-kó**

SM2PL-FUT-OM2-OM1-tell-APPL-IND-PRO17

'You will tell them for him.'

Marten and Kula (2012: 13)

A4'x: Object marking with external restrictions (Analytic [+OM]) [0]

## 2. Geographical distribution and interpretation

Concerning P1, our survey confirms the general tendency, i.e. Analytic (A4) in the west (including western Bantu languages) vs. Synthetic in the Bantu area. While the two intermediate types are few in number, Synthetic-minus-OM type (A2') distributes across different sub-branches including western Bantu, non-Bantu Benue-Congo and non-Benue-Congo Volta-Congo.

In terms of topic sensitivity of subject markers, whereas the subject-prominent type appears to be the overall majority in the Bantu area, the topic-prominent type is also widely distributed. As suggested in Meeussen (1967: 120), topic agreement could possibly be reconstructed in Proto Bantu.

What may be striking about the distribution of types pertaining to external factors affecting object marking regularities is the high variability of different types, especially in the eastern Bantu area. This may suggest that, at least in Bantu, object marking as a morphosyntactic operation tends to be fluid in nature from synchronic as well as diachronic points of view.

### Abbreviations

1, 2, etc.: noun class number, 1SG, 2PL, etc.: person and number, ASP: aspectual marker, FAC: factative, FOC: focus, IND: indicative, NEG: negation, OM: object marker, PROG: progressive, PRO: pronominal agreement marker, PRON: pronoun, PST: past, SM: subject marker, SUBJ: subject, TOP: topic, N.B. Grammatical properties marked through agreement morphology, e.g., a combination of person and number or a

noun class number, are show in subscripts  
as in SM<sub>1PL</sub>, OM<sub>2</sub>, PRO<sub>17</sub>, etc.

(SHINAGAWA Daisuke &  
KOMORI Junko)

- A4: No marking (Analytic) [14 languages]
- ✕ A4': Object can be head-marked (Analytic [+OM]) [2]
- ↗ A2': Subject can be head-marked (Synthetic [-OM]) [7]
- ✓ A2: Head marking (Synthetic) [57]
- ☒ A2c: Topic-sensitive SM (Synthetic) [7]
- A2x: Object marking with external restrictions (Synthetic) [22]
- ☒ A2c/x: Topic-sensitive SM + Object marking with external restrictions (Synthetic) [5]

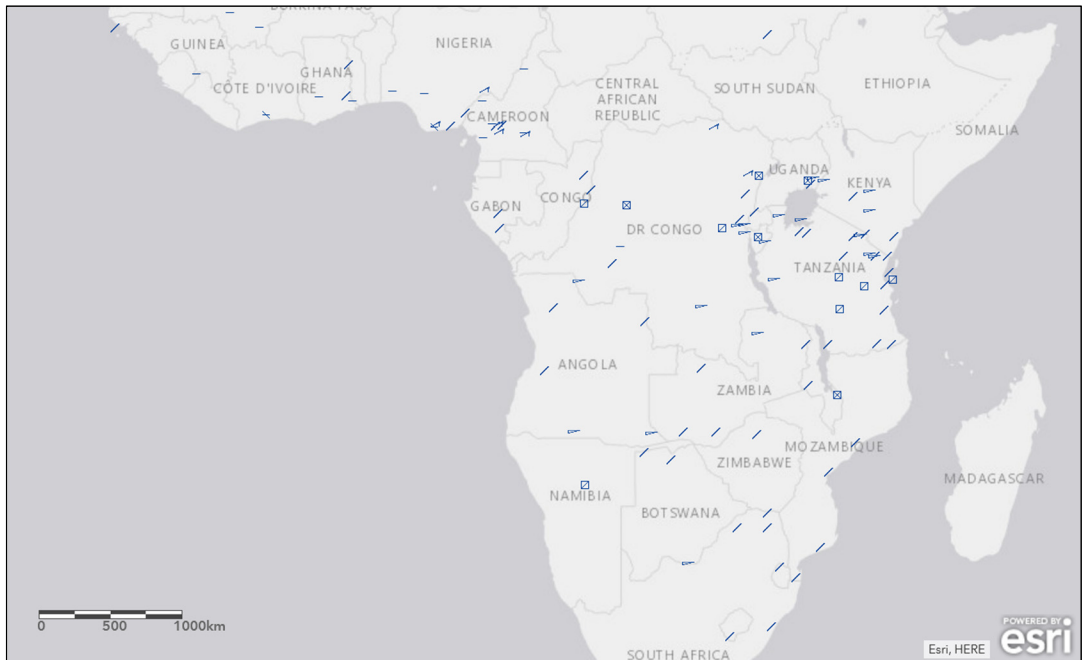


Figure 15.20.1: Alignment in Niger-Congo.

## Alignment in the Kalahari Basin area

### 1. Classification

Figure 15.21.1 shows the geographical distribution of case marking in the languages of the Kalahari Basin area (KBA).

Generally, the nominative-accusative system (or possibly, neutral system for some languages) can be regarded as the dominant alignment type of KBA languages. The 13 sample languages show three types of case marking (A1, A2, and A4 below).

A1: AS/P, Dependent-marking

A2: AS/P, Head-marking

A4: AS/P, No-marking

NB: In Type A4 languages, nominative-accusative alignment is basically observed in the word order, though with intricate language-specific variations that are beyond the scope of this section.

### 2. Geographical distribution



As shown in Figure 15.21.1, non-Khoe-Kwadi languages are basically Type A4 (AS/P, no-marking) languages, except for the West and East !Xoon languages, in which the verbs index the object (Witzlack-Makarevich and Nakagawa, 2019: 402). At this stage, it is not clear from the data available to us whether this feature of !Xoon is contact-induced.

On the other hand, languages in the Khoe-Kwadi family show a different tendency from the other two families. Except for the Naro (Type A4) language, Khoe-Kwadi languages morphologically display the following case markings: Type A1 (AS/P, dependent-marking, observed in five languages in Botswana, namely, Xade and Khute varieties of Glui, Glana, Tshila and Ts'ixa); and Type A2 (AS/P, head-marking, e.g., Standard Khoekhoe and !Ani).


(KIMURA Kimihiko,  
NAKAGAWA Hiroshi)

ALIGNMENT IN THE KALAHARI BASIN AREA




**Tuu (orange)**

- A2: Head-marking 
- A4: No marking (cf. word order) 

**Kx'a (brown)**

- A4: No marking (cf. word order) 

**Khoe-Kwadi (blue)**

- A1: Dependent-marking 
- A2: Head-marking 
- A4: No marking (cf. word order) 

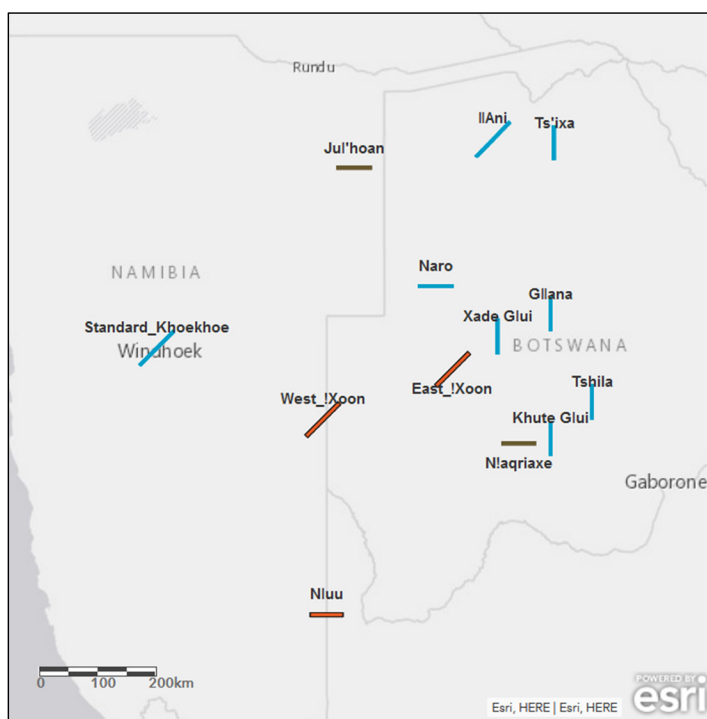


Figure 15.21.1: The geographical distribution of case marking types in KBA.



# Chapter XVI

## Numeral systems



## Numeral systems in Asian and African languages

Numerals are divided into several systems, including quinary, decimal, and vigesimal. In the decimal system, unit numbers (U) are numbers from 1 to 9, and base numbers (B) are the ranks, such as 10 ( $B^1$ ), 100 ( $B^2$ ), and 1000 ( $B^3$ ), to which the unit numbers are added or multiplied (Yasugi 1990, 1995). For instance, a typical decimal system can be seen in the Sinitic, Japonic, Korean, Kra-Dai, Tungusic, Uralic, and Semitic languages. In Western Itelmen (Chukotko-Kamchatkan), there is also a decimal system that employs two base numbers, ‘10’ for each addition and multiplication.

Here, we divide numerals into three major categories, namely, 1 to 10, 10 to 20, and even 20 or more, as each category can have a different system within a language (Yasugi 1990, 1995). Typical vigesimal languages often use quinary and/or decimal system(s) for counting up to 20. In Kartuli, Abkhas, and Chechen (Caucasian), numerals from 1 to 20 follow the decimal system, whereas numerals above 20 adhere to the vigesimal system. If a dialect or language features multiple systems, then we will represent the symbols in Table 1 with a superimposed notation.

Table 1: Types and Symbols

Counting methods	Symbols
Binary Type	∕
Quinary Type	∣
Decimal Type	—
Vigesimal Type	○
Other Types, Including Quaternary and Other Base Number Types	●
None Type	<i>N</i>
Lack of Data	∕

The quinary type is usually combined with other types: Chukchi (Chukotko-Kamchatkan) has quinary and vigesimal systems, while Alutor (Chukotko-Kamchatkan) has quinary and decimal systems. The Ainu decimal system appears to have an etymological foundation in a quinary system, where the number ‘5’ etymologically signifies ‘(being) hand.’ This resemblance can also be observed in a few languages within the Kiranti and Karenic groups (Tibeto-Burman). In the Khmer language of Cambodia (Austroasiatic), the quinary system seems to be combined with a vigesimal system, as the number ‘20’ has an etymological connection to ‘1 is multiplied by 20.’

In case of the Kalahari Basin Area, where the numerals are only up to 3, we will include the languages in the None Type. Bea and Jeru of the Andamanese family (South Asia) are also included in the None Type, in which some quantifiers for ‘single,’ ‘few,’ ‘some,’ and ‘many, all’ can be used for counting. The binary system in Mixed Grate Andamanese (South Asia) and Shabo (isolated; see Nilo-Saharan) and the quaternary system in Ngiti (Nilo-Saharan) are relatively rare. The Dhimal of the Western Himalyish (Tibeto-Burman) also appears to be a quaternary system, as the base numbers 8, 12, and 16 are the numbers of the 4th power. The quinquagesimal, so called 50-based, system can be seen in sporadic areas, such as Salar of Gansu and Qinghai (Turkic), Khalaj of Iran (Turkic), and Zargari Romani (South Asia).

In the Discussion section, we will use the following counting terms: back-counting,

undercounting, double-counting, half-counting, and overcounting (Menninger 2011 [1969]; Yasugi 1990, 1995). Back-counting refers to the method of counting from the upper rank or the forms that arise by subtraction, e.g., the number ‘9’ made by ‘10’ (B<sup>1</sup>) minus ‘1’ (U) in the decimal system, as shown in Mongol (Mongolic). Undercounting refers to the method of counting from the lower rank or the forms that arise by multiplication, e.g., the number ‘11’ made by ‘10’ (B<sup>1</sup>) plus ‘1’ (U) in the decimal system.

Double-counting represents multiplying by 2. In the Eastern Kayah Li of Karenic (Tibeto-Burman), the numbers ‘6’ and ‘8’ are made by the double-counting method, and those numbers are used as a base to make ‘7’ and ‘9’ in the undercounting method. Jerusalem Domari (South Asia) also uses the combined methods for ‘6’ to ‘9,’ which is partially similar to the Eastern Kayah Li. Although different from double-counting, the number ‘20’ comprises ‘10’ and the plural ending with some phonological changes in Tigrinya, Soqotri, and Arabic of Cairene (Semitic).

Overcounting is the complex method of counting from the upper rank: the number ‘24’ made by ‘4 toward the third tens (3 × B<sup>1</sup>)’ in the decimal system, as shown in Ainu (Ainu) and Mongsen Ao of Central Naga (Tibeto-Burman). Half-counting can be considered a kind of “overcounting,” such as 50 being half of 100 in Ubykh (Caucasian).

The map in Figure 16.0.1 shows the preliminary collected report in this book;

the decimal system has been removed from this map because it spreads throughout. A few more languages with the vigesimal system must exist, possibly around the Pacific Coast, although they may not appear on the map because the data for expressing large numbers tend to be missing.

Even in languages without the vigesimal system, it is possible that ‘20’ is a borrowing word or a special lexical form in the decimal system, as a related situation is found in Kurukh (Dravidian). The number ‘20’ is the number of ‘fingers of hands and feet,’ i.e., ‘man.’ It is also the least common multiple of 2, 4, 5, 10, and 20; hence, it may have a special meaning and form. The quinary and vigesimal systems may have occurred spontaneously in various places; however, they appear to have become less common as the decimal system became more widespread. In the case of Yazghulami (Iranian), the vigesimal system was gradually displaced by the decimal system.

The historical change and transition of the quinary, decimal, and vigesimal systems are difficult to analyze and may be reflected in Austronesian languages, which possess these complex systems. Even nonquinary regions are sometimes retained as the etymological fragment of ‘hand’ for the number ‘5,’ and it can be assumed that the quinary system might have been employed in the past.

(FUKAZAWA Mika)

NUMERAL SYSTEMS IN ASIAN AND AFRICAN LANGUAGES

None: Green line  
Quinary Type: Blue line  
Vigesimal Type: Orange line

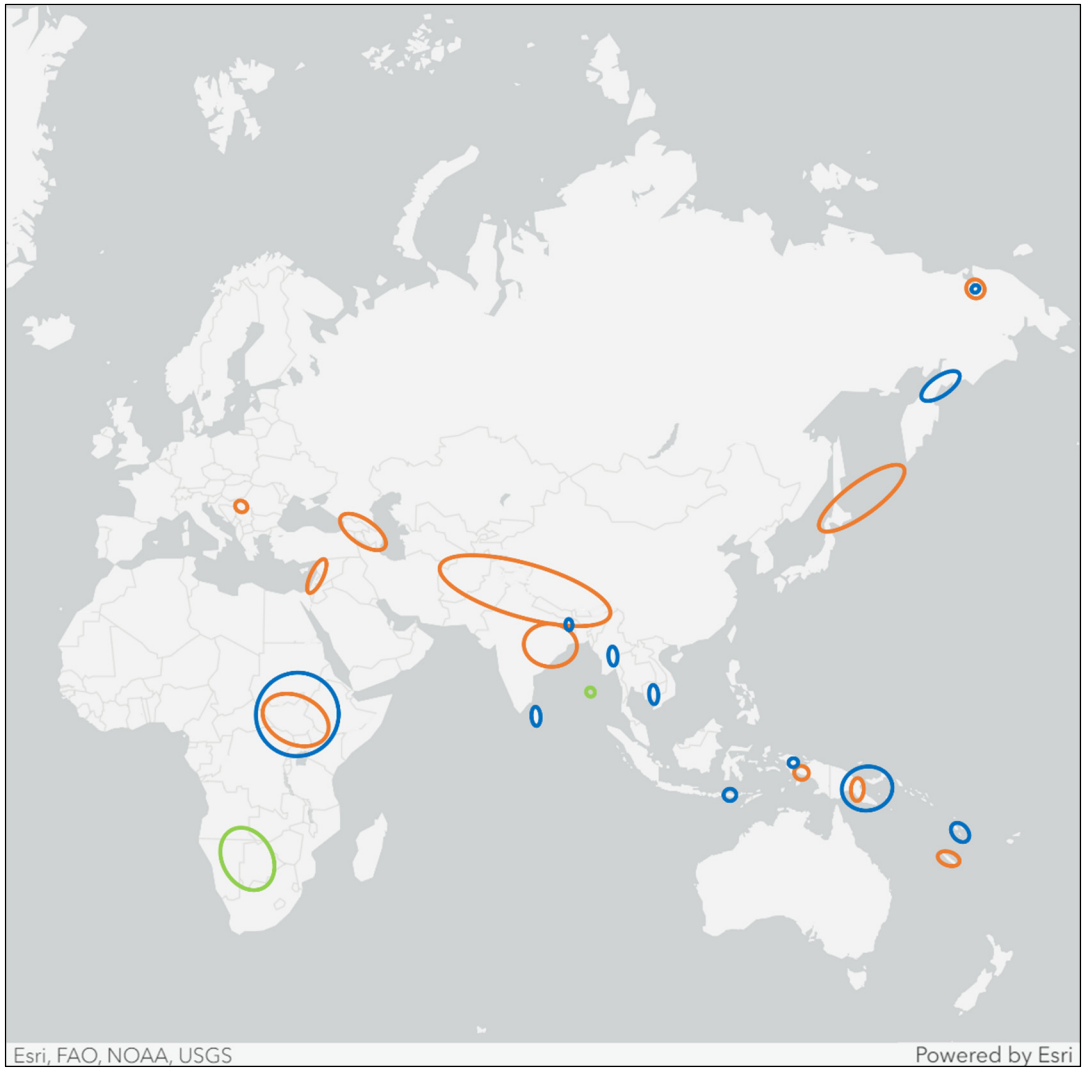


Figure 16.0.1: Numeral Systems in Asian and African languages.

## Numeral systems in Chukotko-Kamchatkan

### 1. Classification

#### 1.1. Chukchi: Quinary and Vigesimal

Chukchi has Quinary (from 5 to 10) and Vigesimal (over 20) systems. From 15 to 19 the base number *kəlyəŋken* appears, though its etymology is unknown. The etymon of 5 is the singular form of ‘hand’, that of 10 is the dual form of ‘hand’, and that of 20 is ‘man’, meaning all the digits of both hands and feet.

The numerals in Chukchi are as follows (Скорик 1961:388-391, Nagasaki 2023:173):

From 1 to 5: *ənnen* ‘1’, *ŋireq* ‘2’, *ŋəroq* ‘3’, *ŋəraq* ‘4’, *mətləŋen* ‘5’.

From 6 to 10: *ənnanmətləŋen* ‘6=1+5’, *ŋerʔamətləŋen* ‘7=2+5’..., *məŋyətken* ‘10=2×5’.

From 11 to 12: *məŋyətken ənnen parol* ‘11=2×5+1’, *məŋyətken ŋireq parol* ‘12=2×5+2’, ..., *kəlyəŋken* ‘15’.

From 16 to 20: *kəlyəŋken ŋireq parol* ‘16=15+1’, *kəlyəŋken ŋəreq parol* ‘17=15+2’..., *qlikkīn* ‘20’.

Over 20: *qlikkīn ənnen parol* ‘21=20+1’, *qlikkīn mətləŋen parol* ‘25=20+5’, *qlikkīn məŋyətken parol* ‘30=20+10’, *qlikkīn məŋyətken ənnen parol* ‘31=20+10+1’, *ŋireqqlikkīn* ‘40=2×20’, *ŋireqqlikkīn məŋyətken parol* ‘50=2×20+10’, *ŋəroqqləkken* ‘60=3×20’, *ŋəroqqləkken məŋyətken ŋəroq parol* ‘73=(3×20)+10+3’, *ŋəraqqləkken* ‘4×20’.

#### 1.2. Koryak: Quinary and Decimal

Koryak has Quinary (from 5 to 10) and Decimal (over 10) systems. The etymon of 5 is the singular form of ‘hand’, that of 10

is the dual form of ‘hand’. Koryak has a word *pajol* for adding a unit number, meaning ‘extra’ (cf. Chukchi *parol*).

Numerals in Koryak are as follows (Жукова 1972:176-177, Nagasaki 2023:174):

From 1 to 5: *ənnen* ‘1’, *ŋətfifeq* ‘2’, *ŋəjoq* ‘3’, *ŋəjaq* ‘4’, *məlləŋen* ‘5’.

From 6 to 10: *ənnanməlləŋen* ‘6=1+5’, *ŋəjaqməlləŋen* ‘7=2+5’, *ŋəjoqməlləŋen* ‘8=3+5’, *qonʕajtfəŋken* ‘9’, *məŋyətken* ‘10’.

From 11 to 20: *məŋyətək ənnen pajol* ‘11=10+1’, *məŋyətək ŋətfifeq pajol* ‘12=10+2’..., *məŋyətək məlləŋen parol* ‘15=10+5’, *məŋyətək ənnanməlləŋen pajol* ‘16=10+(1+5)’..., *ŋətfifeq məŋyətte* ‘2×10’.

Over 20: *ŋətfifeq məŋyətte məlləŋen pajol* ‘25=(2×10)+5’, *ŋəjoq məŋyətto* ‘30=3×10’, *ŋəjaq məŋyətto* ‘40=4×10’..., *qonʕajtfəŋken məŋyətto* ‘90=9×10’.

#### 1.3. Alutor: Quinary and Decimal

Alutor also has Quinary (from 5 to 10) and Decimal (over 10) systems.

The etymon of 5 is the singular form of ‘hand’ and that of 10 is the dual form of ‘hand’. 20 is *qlikkə*, related to the word *qəlik* meaning ‘man’. The word *qlikkə* is treated here supplementarily and does not serve as a base number. Alutor does not have a word for adding a unit number like *parol* in Chukchi and *pajol* in Koryak.

Numerals in Alutor are as follows (Нагаяма 2003:78-79, Nagasaki 2023:175-176):

From 1 to 5: *ənnan* ‘1’, *ŋitaq* ‘2’, *ŋəruqqə* ‘3’, *ŋəraqqə* ‘4’, *məlləŋin* ‘5’.

From 6 to 10: *ənnanməlləj(in)* ‘6=1+5’, *ŋitaqməlləj(in)* ‘7=2+5’, *ŋəruqməlləj(in)* ‘8=3+5’, *ŋəraqməlləj(in)* ‘9=4+5’, *məŋyətkin* ‘10’.

From 10 to 20: *məŋyətək ənnan* ‘11=10+1’, *məŋyətək ŋitaq* ‘12=10+2’..., *qlikkə* ‘20’.

Over 20: *qlikkə ənnan* ‘21=20+1’, *ŋəraq məŋyətkin* ‘40=4×10’, *məlləjin məŋyətkin* ‘50=5×10’, *ŋitaqməlləjin məŋyətkin* ‘70=7×10’.

#### 1.4. Itelmen: Decimal

In the 20<sup>th</sup> century, the Itelmen counted only from 1 to 4 in their language, using Russian for the larger numbers. Itelmen had a Decimal counting system according to historical material (Крашенинников 1949).

Numerals in Western Itelmen in the 18<sup>th</sup> century are as follows (Крашенинников 1949:447):

From 1 to 10: *kon’ij* ‘1’, *kassa* ‘2’, *tʃouk* ‘3’, *tʃaak* ‘4’, *kuymnuk* ‘5’, *kelkuj* ‘6’,

*etuktunuk* ‘7’, *tʃooktunuk* ‘8’, *tʃaaktanak* ‘9’, *togossa* ‘10’.

From 11 to 20: *kon’ij ŋinazin* ‘11=1+10’, *kassa ŋinazin* ‘12=2+10’, ... *kaf tuzad* ‘2×10’.

Over 20: *tʃook tuzad* ‘30=3×10’, *tʃuf-togufann* ‘100’.

The unit number ‘10’ is *togossa*, while *ŋinazin* was used as the base number ‘10’ from 11 to 19. For numbers over 20, the form *tuzad*, differing from *togossa* and *ŋinazin*, is the base number ‘10’. These data indicate that in Western Itelmen there were two different base forms for ‘10’, where *ŋinazin* was used for addition and *tuzad* for multiplication.

#### 2. Geographical distribution

See Figure 16.1.1.

(ONO Chikako)

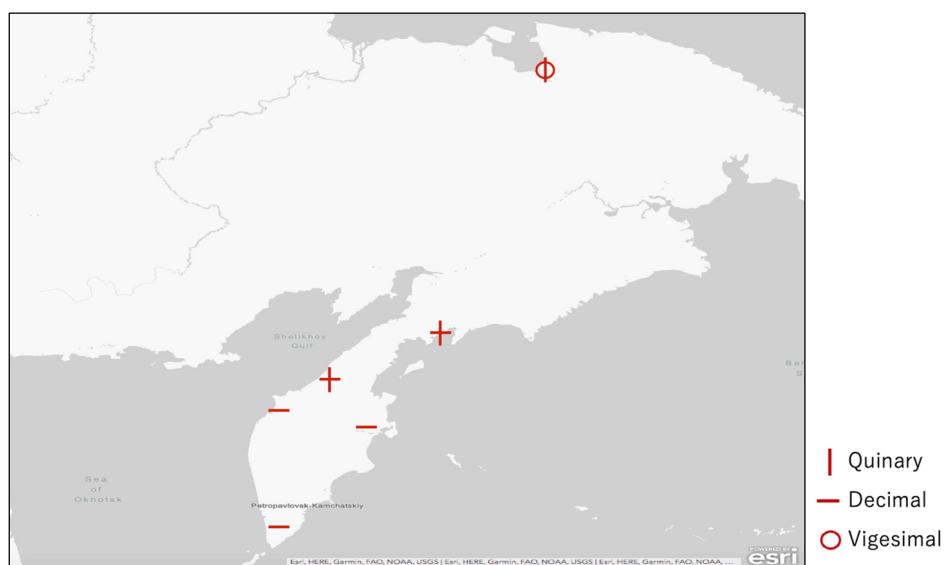


Figure 15.1.1: Numeral systems in Chukotko-Kamchatkan.

## Numeral systems in Ainu

In the numeral systems of Ainu, the numbers from 1 to 9 are unit numbers (U), whereas *wán* ‘10’ and *hót* ‘20’ are base numbers, as shown in Table 1. The classifier *-p(e)* for ‘thing’ and the copula *né* occur frequently in numerals.

The numbers from 11 to 19 and those from 21 to 29 are expressed by undercounting, that is, ‘U + 10’ and ‘U + 20,’ respectively. The number *sinép ikásma wánpe* ‘11 (1+10)’ is presented in Table 1, and here, the transitive verb *ikásma* means ‘to be left over’ or ‘to exceed.’ In contrast, the numbers from 31 to 39 are ‘U + 10 in the second 20.’ The numbers 40, 60, and 80 are counted as ‘the second/third/fourth 20’ in the vigesimal system, whereas the numbers 30, 50, 70, and 90 are counted as ‘10 in the second/third/fourth/fifth 20’ using the method of overcounting (cf. Menninger 2011 [1969], Ochiai 2021). In the case of the number *wánpe etúhotnep* ‘30 (10 in the second 20, or adding 10 will be the second 20),’ presented in Table 1, the prefix *e-* means ‘with’ or ‘adding.’

Some Sakhalin dialects use the base numbers of *kunkutu* ‘10’ and *tanku* ‘100,’ and they are classified in the decimal type (Kindaichi 1913). The words *kunkutu* and *tanku* are thought to be derived from the words related to eagle feathers or sable fur (Sakaguchi 2022). The word *tanku* has been borrowed from Uilta and Manchu by Sakhalin Ainu and Nivkh (Tsumagari 2009). In Ainu, the decimal system is newer than the vigesimal system. The Raichishika dialect of Sakhalin also has *hohne* (< *hotne*) as a term for ‘20’ used by elders (Hattori

1964). The dialects of Asahikawa and Sōya got a new decimal system because they use the word *hót* for ‘10,’ but not for ‘20’ (Hattori 1964). Some dialects use a unique form of the large base number: *atúyta* for ‘100’ in Asahikawa, and *ik* for ‘100’ in Yakumo, Obihiro, and Bihoro, and for ‘1000’ in Horobetsu (Hattori 1964).

Ainu is often referred to as a language with a quinary system and the back-counting method. The etymon of *asikne* ‘5’ probably consists of the word *áske* ‘hand’ and the copula *né*, and the etymon of *wan* ‘5’ includes the reciprocal prefix *u-* and the existential verb *án*, which means ‘both (hands) exist.’ The numbers from 6 to 9 may be formed using the method of back counting, as ‘U from 10’ (cf. Tamura 2000, Matsumoto 2006).

(FUKAZAWA Mika)

Table 1: Numerals in the Saru dialect of Ainu (Hattori 1964, Tamura 2000)

1 <i>siné-p</i>	11 <i>siné-p ikásma wán-pe</i>
2 <i>tú-p</i>	20 <i>hót(-ne-p)</i>
3 <i>ré-p</i>	30 <i>wán-pe e-tú-hot(-ne-p)</i>
4 <i>íne-p</i>	40 <i>tu-hót(-ne-p)</i>
5 <i>asikne-p</i>	50 <i>wán-pe e-ré-hot(-ne-p)</i>
6 <i>iwán-pe</i>	60 <i>re-hót(-ne-p)</i>
7 <i>árwan-pe</i>	70 <i>wán-pe e-íne-hot(-ne-p)</i>
8 <i>tupésan-pe</i>	80 <i>íne-hot(-ne-p)</i>
9 <i>sinépesan-pe</i>	90 <i>wán-pe e-ásikne-hot(-ne-p)</i>
10 <i>wán-pe</i>	100 <i>asikne hót(-ne-p)</i>



## NUMERAL SYSTEMS IN AINU

- Decimal type (possibly quinary type in a counting system from 1 to 10)
- Vigesimal type



Figure 16.2.1: Numeral systems in Ainu.

## Numeral systems in Japonic

All Japonic languages (Japanese and Ryukyuan) have decimal numeral systems. That is, the number of units ranges from one to nine, and the power of the base number is a multiple of 10. The structure of the units and base numbers is  $U \times B + U$ .

One noteworthy feature of numeral systems in Japonic is that they have two series of numerals: the native Japonic system (“J”) and the Sinitic system (“S”). The degree to which each system is employed varies across dialects. The maps are classified into different types based on the different usage ranges for each system.

In Japanese, both the native numeral system (*hito-tsu* ‘1,’ *futa-tsu* ‘2,’ *mi-ttsu* ‘3,’ ...) and the Sinitic system (*iči* ‘1,’ *ni* ‘2,’ *san* ‘3,’ ...) (corresponding to Mandarin *yī*, *èr*, *sān*, ...) are used from one to ten, but for 11 and above, only the Sinitic system is used (= J, S-S-S).

In contrast, Ryukyuan languages exhibit more complex systems of numerals. In addition to the J,S-S-S system found in Japanese dialects, both native and Sinitic systems exist for 11–19 (J,S-J,S(/S)-S) or 11–20 (J,S-J,S-S) (e.g., *tu: ti:či* ‘11,’ *tu: ta:či* ‘12,’ ... in Shuri dialect) followed by a Sinitic system for 20 or 21 and above. The native and Sinitic systems are used even for 20 or 21 and above (J,S-J,S-J,S). In the Ryukyuan languages, a mixed type of Japonic and Sinitic numerals (“SJ”) is observed (e.g., *niĵu: ti:či* ‘21,’ *ha:ku ti:či* ‘101’ in Izena dialect).

For 20 or more, native numerals are also used in Ryukyuan languages, such as *patatsi* ‘20’ in Miyako dialects and *misutsi*

‘30,’ *yusutsi* ‘40’ in the Irabu dialect. The native numerals are used up to *mumu* ‘100,’ while beyond that, Ryukyuan languages typically employ Sinitic numerals, such as *šīN* ‘1,000,’ but some native expressions such as *tu: mumu* ‘1,000’ also exist.

In the native numeral system of Japonic languages, counters (or classifiers) are necessary, and numeral roots (*hito-* ‘1,’ *futa-* ‘2,’ *mi-* ‘3,’ ...) cannot be used without them (e.g., *hito-tsu aru* ‘there is one (thing),’  $\times$ *hito aru*). However, in Miyako Ryukyuan, there are expressions such as *itsi nu pītu* ‘five people,’ *muyu nu pītu* ‘six people,’ *nana nu pītu* ‘seven people,’ *ya: nu pītu* ‘eight people,’ *kukunu nu pītu* ‘nine people,’ and *tu: nu pītu* ‘ten people’ (Yasuda 2015). The numeral root *to:* ‘ten’ is an exception that does not combine with *-tsu* (e.g., *to: kazoeru*, ‘to count to ten,’  $\times$ *to:-tsu kazoeru*). When counters are added, *to:* changes to *to* (e.g., *to-e* ‘ten folds,’ *to-tsuki* ‘ten months,’ *to-tose* ‘ten years’).

The native numeral system is no longer productive. Regional differences in the usage of *mi-* ‘3’ exist, with some dialects using *mi-hako* ‘three boxes’ and *mi-tari* ‘three people,’ while others use *san-pako* ‘three boxes’ and *san-nin* ‘three people.’ In the Sinitic system, counters are not necessarily required, and numbers can be expressed as *san kazoeru* ‘to count to three’ and *ĵu: kazoeru* ‘to count to 10.’

A mixture of Japonic and Sinitic systems is also present in Japanese (e.g., *ĵu:-yokka* ‘14th day / 14 days’).

The counting system also differs, as standard Japanese uses *hi:*, *fu:*, *mi:*, *yo:*, ...

while the Shuri dialect uses *ti*:, *ta*:, *mi*:, *yu*:, ... to represent '1, 2, 3, 4, ...,' respectively.

The Old Japanese numeral system is also decimal; native numerals are widely used. Numbers such as 1,000 and above have forms such as *ti* '1,000' and *yorodu* '10,000,' but their meaning may be 'many, more' rather than exactly '1,000' or '10,000.' The forms for 11, 12, ... are *towo amari pito-tu*, *towo amari puta-tu*, ... and for 21, 22, ..., *pata-ti amari pito-tu*, *pata-ti amari puta-tu*, ... A peculiar feature is that some base numbers have different forms, such as *towo* ~ *so* '10' (e.g., *mi-so* '30') and *momo* ~ *po* '100' (e.g., *ya-po* '800'). In addition, *towo* and *so* are unlikely to be cognates since they have different vowels: /təwə/ ~ /təwo/ and /so/ [sʷo], but /w/ may have caused /ə/ > /o/. In contrast, *momo* and *po* are believed to be cognates, as *momo* could have originated from the reduplication of \*mo, which has similar sounds to *po*, like *pata* 'or' and *mata* 'again.' Moreover, there is a unique form of *i*- '50' (e.g., *i-ka* '50 days') in Old Japanese, possibly related to *itu*- '5' (e.g., *itu-ka* '5 days / 5<sup>th</sup> day'). Additionally, 20 has a distinctive form *pata-ti*, perhaps related to *puta-tu* '2,' although it is also possible that *ta* in *pata*- represents 10. There is an old form *tariya* '10,' and according to Hirayama (1983), there is a form *tarai* '10' in the Tarama dialect of southern Ryukyuan. In Old Japanese, a form *taumari* '10 and' exists, which is thought to be a contracted form of *towo amari* or *to amari*, but it is also possible that *tau* itself corresponds to 10. Thus, the older form of 10 may have been \*tawə, which is separated into \*tawo (> *tau*) and təwə (> *towo*), according to

vowel harmony. Some have suggested that *towo* '10' relates to *tāwa*- ~ *tōwo*- 'to bend.' It is likely that *towo* originated from the bending of all fingers of both hands, which Japanese people use when counting, as in *yubi ori* 'finger-folding.'

Some hypothesize that the Japonic language has a double-counting system, whereby *puta*- '2' is derived from *pito*- '1,' *mu*- '6' from *mi*- '3,' and *ya*- '8' from *yo*- (< *yə*-) '4.' While *pito*- (< *pitə*-) and *puta*- may not be cognates since *pito*- (low tone) and *pūta*- (high tone) have different tones, *mī*- and *mū*-, as well as *yó*- and *yá*-, may be doublets. Counting two can be achieved with one hand, but six and eight require both hands. The form *nàna*- '7' is often compared to Tungusic *nadan* and Koguryo *nan-in*. The coinage of *yo*- '4' and *ya*- '8' based on the double-counting system must be examined before comparing them with Tungusic \*dügin '4' and \*zapkun '8.' *yó*- '4' may be related to *yó* (< *yə*) 'boundary,' while *kòkono*- may be linked to *kòko*- 'many, much.' Alternations between /i/ and /u/ are present in the *-ti* ~ *-tu* (a counter) and *pi* 'day' ~ *-pu* (e.g., *ke-pu* 'today' and *kino-pu* 'yesterday'); hence *mi*- ~ *mu*- is conceivable. In addition, the widespread alternations between /o/ (< /ə/) and /a/, such as in /nōru/ (< /nəru/) 'to say' ~ /nā/ 'name,' /pitə-/ '1' and /pita/ 'pure' support the possibility of derivations of *yə*- '4' to *ya*- '8.' Finally, *pata-ti* '20,' *miso-di* '30,' and *yoso-di* '40' are also used to count things in Old Japanese, similar to some Ryukyuan languages (*-ti* ~ *-di* in Old Japanese is a counter). In modern Japanese, this term is restricted to age expression.

(NAKAZAWA Kohei)

## NUMERAL SYMTEMS IN JAPONIC

- decimal
- (decimal)

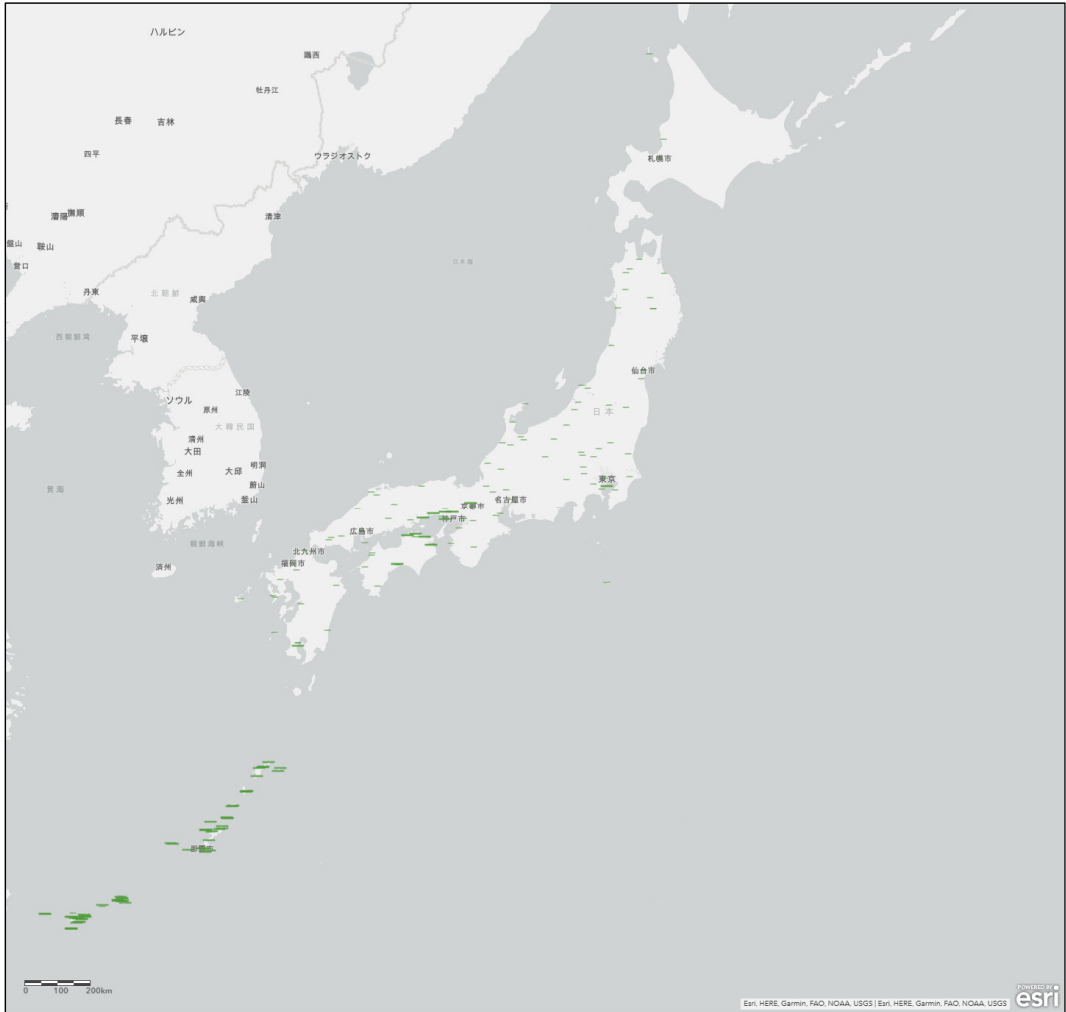


Figure 16.3.1: Numeral systems in Japonic.

- ≡ S
- ≡ SJ,S
- ↑ SJ
- J,S/S
- ∩ J,S(/S)
- Y J,S
- ^ J/S
- ∪ J/SJ,S
- ∕ J(/S)
- J

## NUMERAL SYSTEMS IN JAPONIC

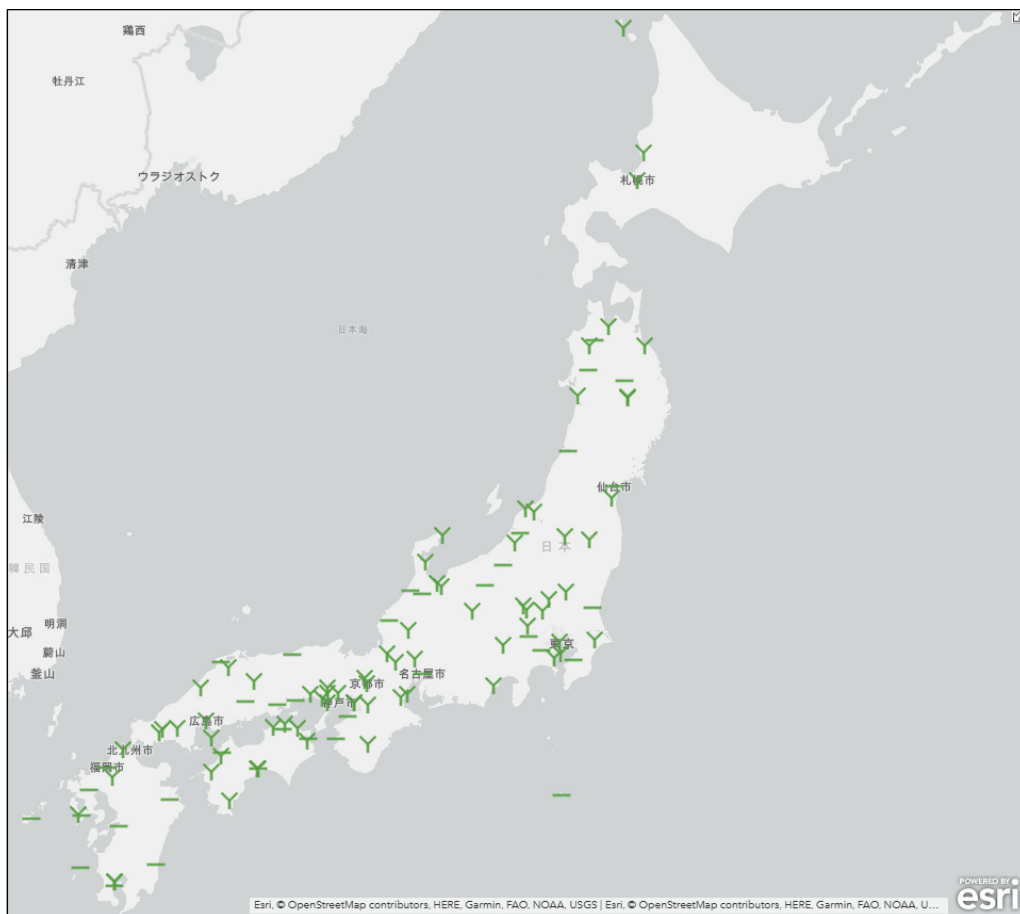


Figure 16.3.2: Numeral systems in mainland Japan (1–10).

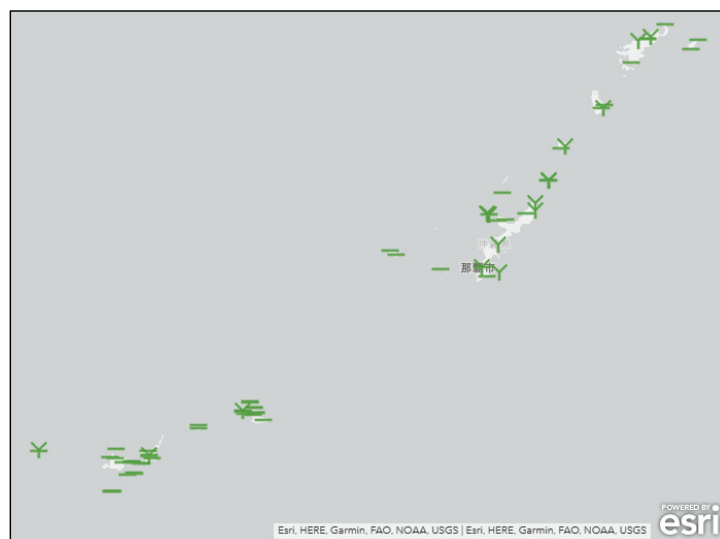


Figure 16.3.3: Numeral systems in Ryukyu Islands (1–10).

# NUMERAL SYSTEMS IN JAPONIC

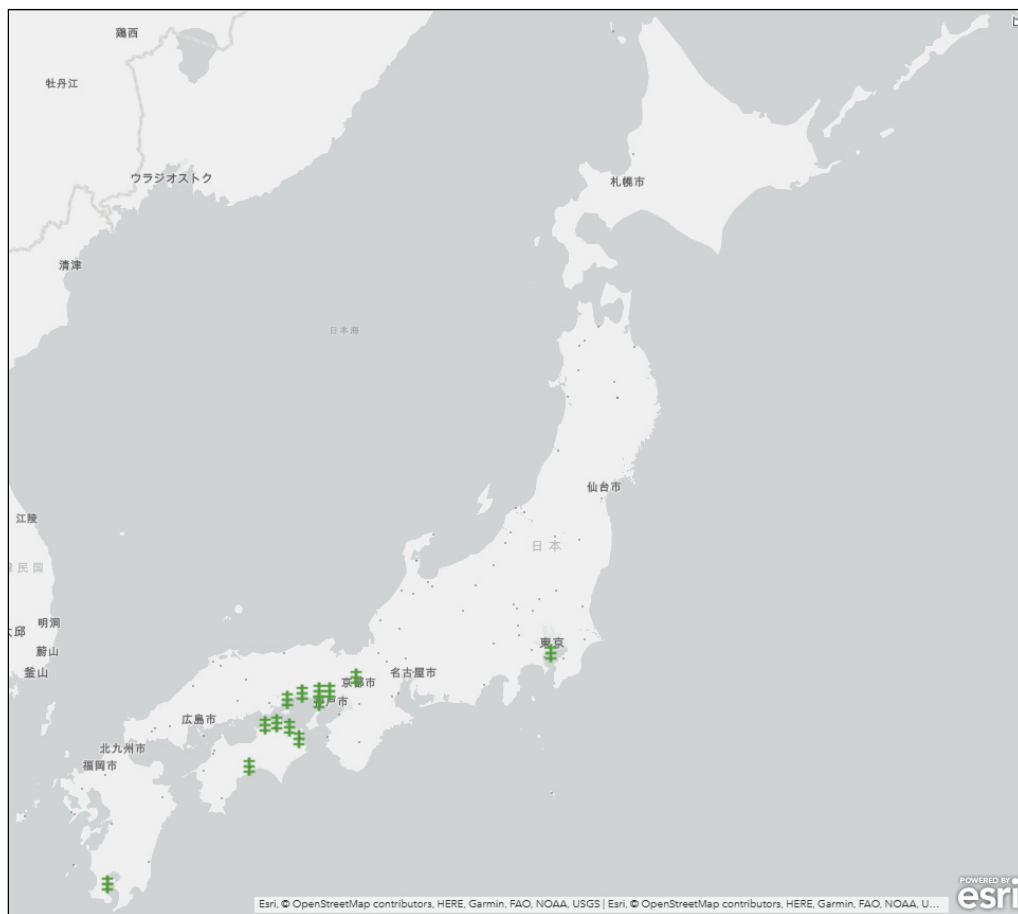


Figure 16.3.4: Numeral systems in mainland Japan (11–20).



Figure 16.3.5: Numeral systems in Ryukyu Islands (11–20).

## NUMERAL SYSTEMS IN JAPONIC

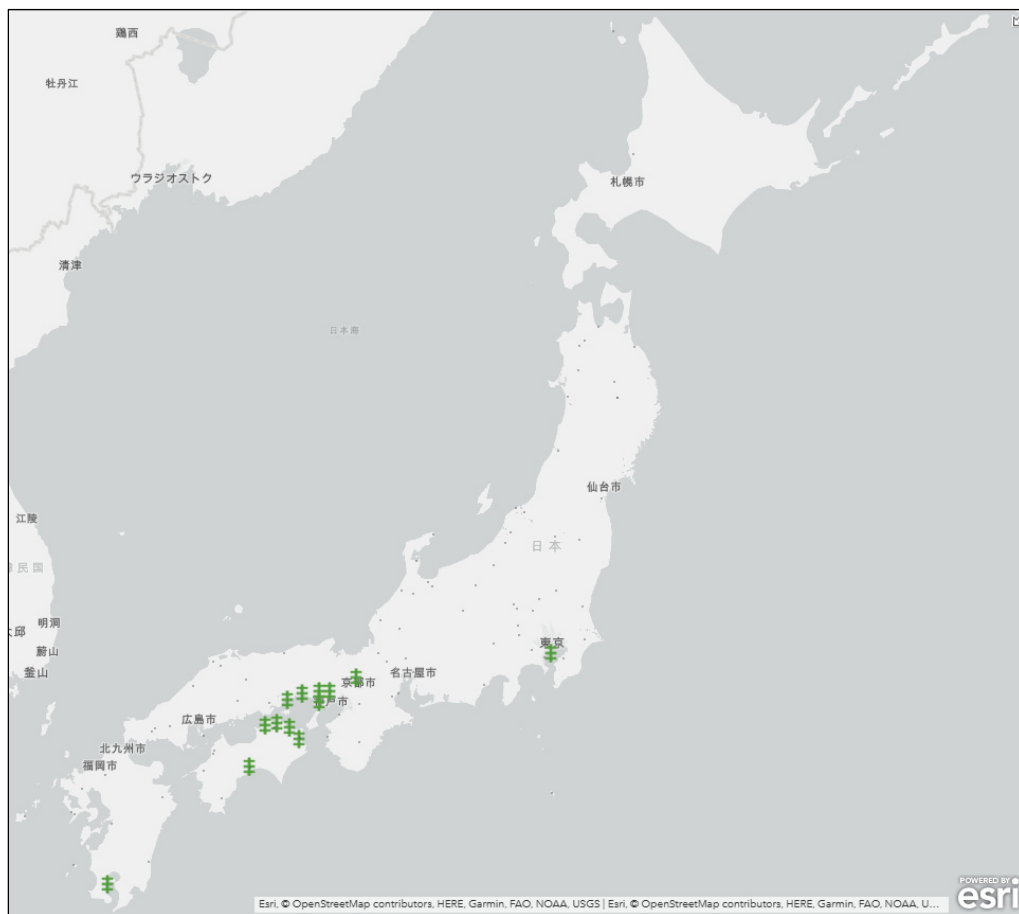


Figure 16.3.6: Numeral systems in mainland Japan (21-).

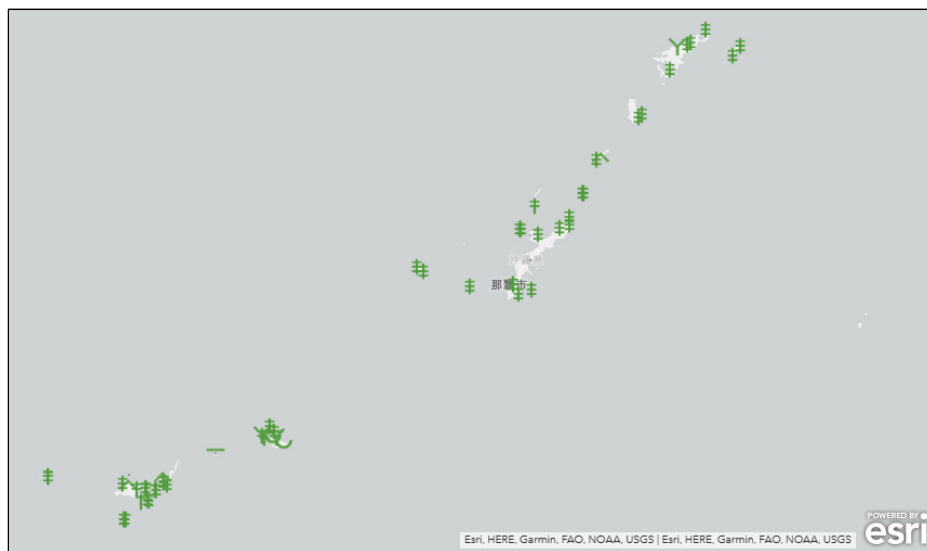


Figure 16.3.7: Numeral Systems in Ryukyu Islands (21-).

## Numeral systems in Korean

### 1. Classification

In Korean, we have two kinds of numeral systems: one is native and the other Sino-Korean. In this paper, I will focus on the native numeral system.

#### Modern Korean

Modern standard forms of the native Korean forms for numbers from 1 through 10 are the following:

1 hana (han)	6 jɔsɔs
2 tu:r (tu)	7 irkop
3 se:s (se:, sɔ:k)	8 jɔtɔrp
4 ne:s (ne:, nɔ:k)	9 ahop
5 tasɔs	10 jɔr

(Final 's' in all cases is pronounced as [t] in isolation, Final 'p' in 8 'jɔtɔrp' is frequently dropped in colloquial speech. Forms in parentheses represent adnominal forms.)

Numbers from 11 through 20 are the following:

11 jɔrhana	16 jɔrrjɔsɔs
12 jɔrtu:r	17 jɔrrirkop
13 jɔrse:s	18 jɔrrjɔtɔrp
14 jɔrne:s	19 jɔrahop
15 jɔrtasɔs	20 simur

Numbers from 11 to 19 are made up by adding numbers 1 to 9 to the base number 10, indicating that this is a case of decimal system. For the number 20, we have a single new morpheme which cannot be further analyzed.

Numbers from 21 to 99 are made in a similar way so that only the numbers for 20, 30, 40, ... up to 90 are shown below:

20 simur	60 jesun
30 sɔrin	70 irhin
40 mahin	80 jɔtin
50 swin	90 ahin

Some of these words are made up by multiplying the unit number by  $B^1$ , the decimal base number, which seems to have a remote phonetic connection to the word for 10 *jɔr*.

$30 \text{ sɔrin} = 3 \text{ se:} \times B^1$
$70 \text{ irhin} = 7 \text{ irk(op)} \times B^1$
$80 \text{ jɔtin} = 8 \text{ jɔt(ɔrp)} \times B^1$
$90 \text{ ahin} = 9 \text{ ah(op)} \times B^1$

However, it seems difficult to find such connections for numbers 20 and 50. And it is interesting to note that 60 *jesun* is made up by undercounting, i.e., 10 + 50 (this morphological analysis for the word *jesun* can be verified if we look at the Middle Korean form for 60 as shown below). The form for the number 40 *mahin* is aberrant. Shiratori (p.m.) guessed that the original form of this may be *\*nahin* in order to make a connection to the unit number for 4.

The maximum number that can be expressed in the native numeric system is 99 *ahinahop*. Numbers more than 99 are expressed by using Sino-Korean numeric system.



**Middle Korean**

Next we turn to the Middle Korean (spoken in 15-16c.) numeric system.

- |                    |          |
|--------------------|----------|
| 1 hana (hʌn)       | 6 jesis  |
| 2 tu:r (tu:)       | 7 nirkup |
| 3 seih (sei, se:k) | 8 jetirp |
| 4 neih (nei, ne:k) | 9 ahop   |
| 5 tasas            | 10 jerh  |

(The vowel transcribed as ‘e’ is phonetically a central vowel [ə].)

The numbers for 20, 30, 40, ... up to 90 are the following:

- |            |            |
|------------|------------|
| 20 simir   | 60 jesjuin |
| 30 sjerhin | 70 nirhin  |
| 40 mazʌn   | 80 jətʌn   |
| 50 suin    | 90 ahʌn    |

For numbers more than 99, Middle Korean had forms for 100 and 1000.

- |        |            |
|--------|------------|
| 100 on | 1000 cimin |
|--------|------------|

However, I do not know examples of these words used in such a way that they can express numbers like 101, 102, ..., or 200, 300, etc. This seems to suggest that these are not part of the original numeral system in this language.

**Etymology**

The unit number for 5 has been often referred to as having a connection to the verb *tat-* ‘to close’, and the number for 10 as related to the verb *jɔr-* ‘to open’.

For the numbers 7, 8 and 9, Shiratori (1909) proposed a subtraction theory: 7 = 10 - 3, 8 = 10 - 2, 9 = 10 - 1. However, there is a problem, at least, for the number 7. Middle Korean form for 7 is *nirkup*, showing no sign of connection to the number 10. Ogura (1935) instead proposed a construction of *ni-rum öp* (his transcription) meaning ‘having no name’. This incidentally coincides with the modern Korean name for the ring finger, *mumjɔŋci* (無名指). Although this theory seems better than the subtraction theory, *mumjɔŋci*, in turn, seems to be a borrowing from Chinese, so that Ogura’s theory is not adequate, either.

In Middle Korean, the form for the number 100 *on* is sometimes referred to as a borrowing form Turkic word for the number 10, and the form for the number 1000 a borrowing from Tungusic or Mongolian *tümen*.

**2. Geographical distribution and interpretation**

There are no geographical differences regarding the numeric systems in this language.

(FUKUI Rei)

# NUMERAL SYSTEMS IN KOREAN

Decimal

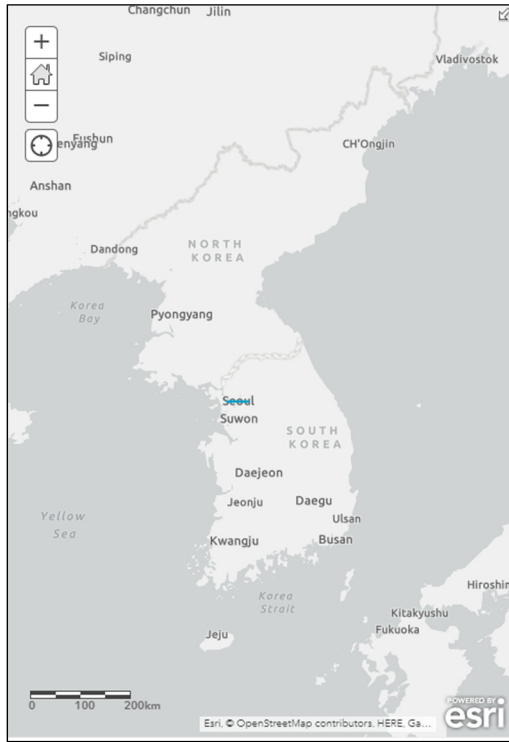


Figure 16.4.1: Numeral systems in Korean.

## Numeral systems in Sinitic

Sinitic languages employ the decimal system (see Figure 16.5.1). This basic system dates back to Old Chinese. The largest base number observed in the oracle bones is *wan* 万 for 10<sup>4</sup>; numbers above *wan* appeared in the Zhou dynasty (Xiang 2010: 50).

The unit numbers are numbers from 1 to 9, as shown in Table 1.

Table 1. Unit numbers in Sinitic.

1 <i>yi</i> 一	4 <i>si</i> 四	7 <i>qi</i> 七
2 <i>er</i> 二	5 <i>wu</i> 五	8 <i>ba</i> 八
3 <i>san</i> 三	6 <i>liu</i> 六	9 <i>jiu</i> 九

The base numbers are multiples of 10: *shi* 十 for 10, *bai* 百 for 10<sup>2</sup>, *qian* 千 for 10<sup>3</sup>, and *wan* 万 for 10<sup>4</sup>. The unit and base numbers are distinguished by position. *Ershisan* 二十三 ‘23’ is the unit number *er* 二 × the base number *shi* 十 + the unit number *san* 三.

Note that the unit number 2 has another form, *liang* 两, distinguished from *er* 二 in usage: *er* 二 is used to count up or express orders, while *liang* 两 precedes classifiers, except for the classifier *liang*.

*yi* 一, *er* 二, *san* 三 ‘one, two, three’

*di'er* 第二 ‘the second’

*liang ge ren* 两个人 ‘two people’

*er liang chaye* 二两茶叶 ‘100 grams of tea’

Some southern dialects also use *liang* 两 to count up. Figure 16.5.3 shows the forms for the unit number 2. B *liang* 两 type is distributed in Jiangsu, Zhejiang, Fujian, Hunan, Guangdong, Hainan, and Taiwan, being particularly concentrated in the Wu and Min dialect areas.

Most Wu dialects have the cardinal number *nian* 廿 for 20 (see Figure 16.5.2). The numbers from 21 to 29 are expressed as *nian* 廿 + the unit number.

Wujiang 吴江: 20 廿 [ɲiɛ<sup>213</sup>] / 21 廿一 [ɲiɛ iəʔ<sup>214</sup>] / 22 廿二 [ɲiɛ ɲi<sup>333</sup>]

Cf. 30 三十 [sɛ zəʔ<sup>523</sup>] / 40 四十 [sɿ zəʔ<sup>523</sup>] (Wang 2010: 171)

Some Min dialects employ “*nian* 廿 + the unit number,” although their form for 20 is not *nian* but *ershi* 二十.

Fuzhou 福州: 20 二十 [nei<sup>242</sup> θeik<sup>5</sup>] / 22 廿二 [niek<sup>5</sup> nei<sup>242</sup>] (Nakajima 1979: 256)

*Nian* 廿 is also distributed in Guangdong and Guangxi; however, *nian* in these areas can be regarded as a fusion of *er* 二 and *shi* 十, and some dialects even have fusional forms for 30, 40, 50, etc.

Table 2. *Nian* 廿 in the Xinxing 新兴 dialect.

(Zhan et al. 1998: 687)

	20	30	40
base form	二十 [ji <sup>42</sup> sep <sup>31</sup> ]	三十 [sam <sup>45</sup> sep <sup>31</sup> ]	四十 [si <sup>44</sup> sep <sup>31</sup> ]
fusional form	廿 [(j)iep <sup>31</sup> ]	卅 [sap <sup>43</sup> ]	卌 [sip <sup>43</sup> ]

Forms for 1 can be classified into 3 types: A *yi* 一, B *shu* 蜀, and C others (see Figure 16.5.4). B *shu* 蜀 is characteristic of Min dialects, distributed in Fujian, Hainan, and Taiwan. *Shu* 蜀 was listed in *Fangyan* 方言 by Yang Xiong 揚雄: 一, 蜀也。 (according to Qian Yi 錢繹, this phrase should be revised as: 蜀, 一也。) 南楚謂之獨。 ‘*Shu* 蜀 denotes *yi* 一 (one). It is termed *du* 獨 in south Chu 楚.’ B *shu* 蜀 can be regarded as the reflex of regional variations in the ancient times; however, whether *shu* 蜀 is a dialectal form of Sinitic or a language of another ethnic group remains to be proven in a future analysis (Wang 2018: 744-746).

(SUZUKI Fumiki)

NUMERAL SYSTEMS IN SINITIC

— Decimal Type



Figure 16.5.1: Numeral systems in Sinitic.

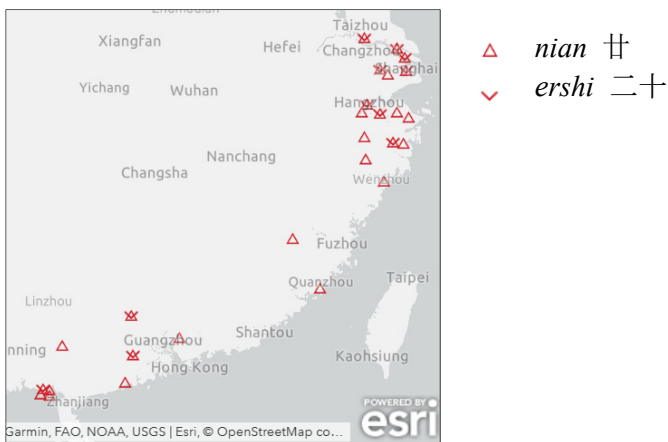


Figure 16.5.2: Cardinal number 20 in Sinitic.

NUMERAL SYSTEMS IN SINITIC

A. *er* 二 type

- A-1-1 əɾ, ʔəɾ, Øəɾ, fiəɾ, ə, ɐɾ, ɛɾ, ɐʳ, əʳ
- ⊖ A-1-2 ə, x, e, ε, ɛ, ɐ, ɐ, œ, a, ai, Øɬw, ʏɛ, ʏə, ʏɾ
- ⊕ A-1-3 i, i, ji, w
- A-1-4 y
- ⊙ A-1-5 o, ɔ, Øɔ, ø, ø
- ⊗ A-1-6 ɿ, ɛɿ
- † A-2-1 ruu
- Ψ A-2-2 gi, gai
- A-2-3 [ə, zɿ, zɿ, zɿ, zɿ]
- ˆ A-2-4 zi, zɿ, zi, tsi, dzi
- l A-2-5 li, lɛ, lai

- ↙ A-2-6 ni, ni, ni, fiɿ
- ∨ A-2-7 nei, nəu, na, nai
- ↘ A-2-8 ni, ni, ni
- A-3-1 l
- ▣ A-3-2 n
- ▤ A-3-3 ŋ

B. *liang* 两 type

- △ B-1 lian, lian, liɿ, lion, liã, fliã, liayN, luã, lio, liam
- ▲ B-2 niã, niãN, no, nɔ, nɔ, nɔ, nan, nuɿ, ni
- ▲ B-3 fiã
- ▲ B-4 tso

C. *shuang* 双 type ▲ sɔŋ

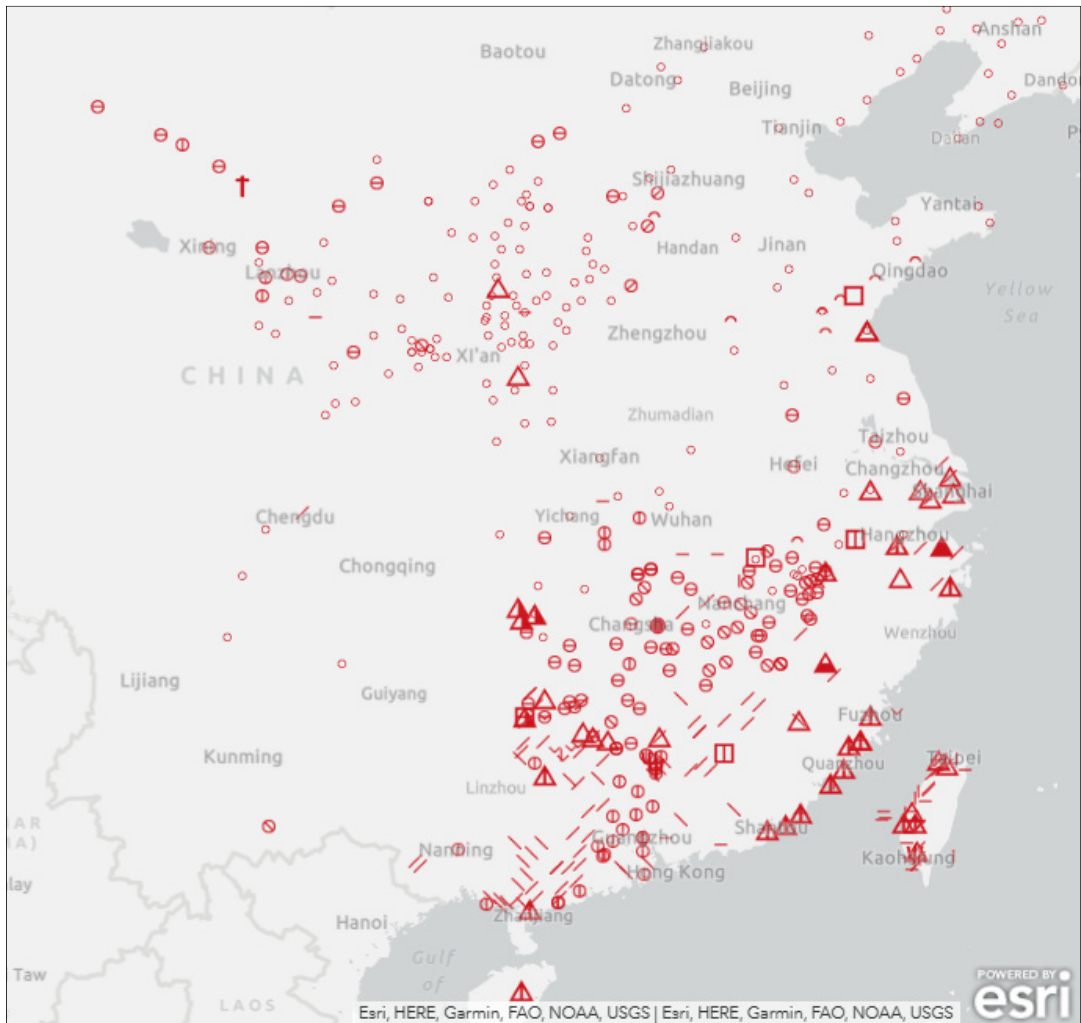


Figure 16.5.3: Unit number 2 in Sinitic.

NUMERAL SYSTEMS IN SINITIC

A. *yi* — type

- ◻ A-1-1 i, Øi, iɿ, j, ji, zi, ei
- A-1-2 iə, ie, ie, ia, Øie, iz, jiə
- ⊖ A-1-3 ɿ, zɿ
- ⊕ A-1-4 others
- ★ A-2 il
- ▲ A-3-1 iɿ, iɿ, ɿiɿ
- △ A-3-2 iəɿ, ieɿ, ieɿ, izɿ, iəɿ, eɿ, eiɿ
- ▲ A-3-3 ɿaɿ

- A-4-1 it, zit, zət, zit
- | A-4-2 ət, iet, jət, jiet

B. *shu* 蜀 type

- ▭ B-1 tsek, ziaɿ, lok, θuok
- ▭ B-2 tsit, tsi
- ▭ B-3 ɿəɿ, ɿəɿ ɿuəɿ, ɿuəɿ, θəɿ

C. Others

- ★ C-1 aɿ 阿
- ★ C-2 kuo 𠵹

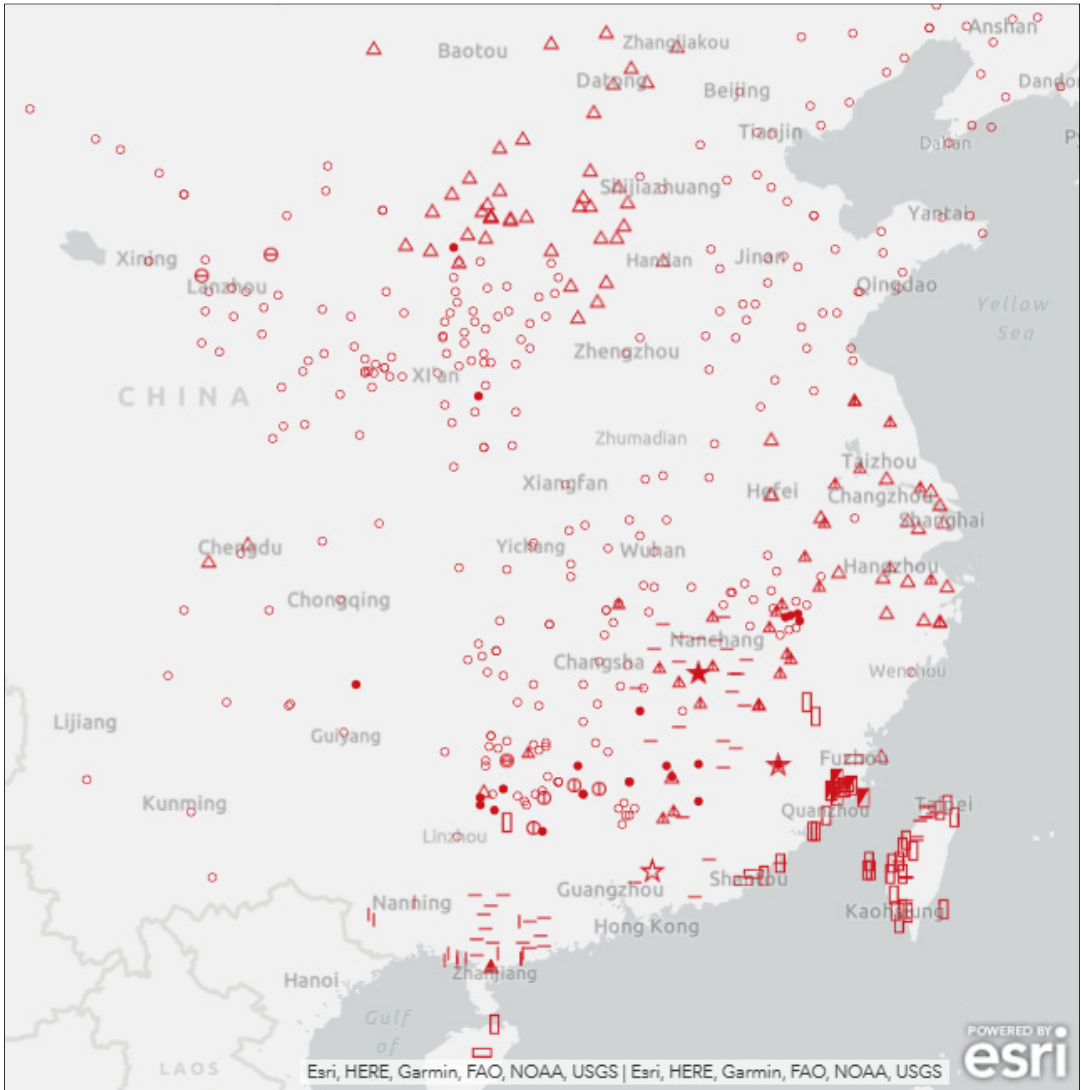


Figure 16.5.4: Unit number 1 in Sinitic.

## Numeral systems in Hmong-Mien

### 1. Classification

In this article, we examine the geographical distribution of forms for numerals in Hmong-Mien to explore the courses of change that the numeral systems of Hmong-Mien have undergone. In order to draw maps, we will classify the systems based on two different criteria sets, the criteria stipulated for the whole project and the criteria stipulated for Hmong-Mien. Since most of the data that have been published so far only provide precise descriptions on numerals under 100, we will limit ourselves to analyzing numerals from 1-99.

As far as numbers under 100 are concerned, all of the Hmong-Mien lects that we examined for this study have a decimal undercounting system: an arbitrary number  $X$  is generally expressed by the formula  $X = U_1 \times 10 + U_2$ , where each of  $U_1$  and  $U_2$  denote a unit number selected from 1-9. Therefore, based on the criteria stipulated for the whole project, the map for the numeral system of Hmong-Mien exhibits a uniform distribution (see Figure 16.6.1).

Although all of the Hmong-Mien lects have a decimal undercounting system, some variations can be observed among the systems. Many lects have two different series of numerals in denoting numbers appearing in the formula  $U_1 \times 10 + U_2$ . We call the two series Series 1 and Series 2. A typical example is indicated in Table 1, which illustrates the numerals in Xiaozhai (Younuo, Hmongic) (Mao & Li 2007:68). This lect uses the Series 1 numerals in denoting numbers from 1 to 10, and uses the Series 2 numerals in denoting numbers after

10. For example, ‘22’, expressed as ‘two’-‘ten’-‘two’, is denoted not by  $u^1-k\sigma^{6/8}-u^1$ , but by  $\eta i^{6/8}-sje^{6/8}-\eta i^{6/8}$ . Additional information: All the numerals in Series 1, except for numerals 1 and 10, are cognate to each other in all the Hmong-Mien lects. All the numerals in Series 2 are Chinese loanwords.

We classify lects into several types, depending on where two series of numerals appear in the formula  $U_1 \times 10 + U_2$ . Two series of numerals appear.

- A. Nowhere (= Only one series of numerals);
- B. Only in ‘2’ or ‘10’;
- C. Only in ‘1’, ‘2’, and ‘3’;
- D. In all numbers but ‘10’;
- E. In all numbers

We will examine each case in detail below (see Figure 16.6.2 for the geographical distribution of each type).

Type A: Each lect has only one series of numerals. Type A comprises lects belonging to North Hmongic (aka, Xiangxi) and East Hmongic (aka, Qiandong).

Type B: This type has three subtypes. Type B1 has two numerals only in ‘2’. Type B2 has two numerals only in ‘10’. Type B3 is a composite of Type B1 and B2, and has two numerals in both ‘2’ and ‘10’. In this Type, the Series 2 numeral denoting ‘2’ only appears in the  $U_1$  slot. Type B1 comprises four lects of the Pu Nu languages. Type B2 comprises one lect of West Hmongic (aka, Chuanqiandian): Gaozhai. Type B3 comprises two lects of West Hmongic: Dananshan and Anshun.

Type C: Type C has two numerals in ‘1’, ‘2’, and ‘3’. In this Type, the Series 2

numeral denoting ‘1’ only appears in the U<sub>2</sub> slot after 10. The Series 2 numeral denoting ‘2’ and ‘3’ only appears in the U<sub>1</sub> slot. Type C comprises lects belonging to Pa Hng (Hmongic).

Type D: Type D has two series of numerals in all numbers except ‘10’. In this type, the Series 2 numerals appear in the U<sub>1</sub> and U<sub>2</sub> slot. Type D comprises Mienic lects belonging to Iu Mien, Kim Mun, and Zao Min.

Type E: This type has two series of numerals in all numbers appearing in the U<sub>1</sub> and U<sub>2</sub> slot and the ‘10’ slot of the formula U<sub>1</sub>×10+U<sub>2</sub>. This type comprises lects belonging to Kiong Nai (Hmongic), You Nuo (Hmongic), Ho Ne (aka, She, Hmongic), and a few Mienic lects.

In Types B and C, the Series 2 numerals appear only in the first ‘2’ of ‘2’-‘10’-‘2’, which means 22, but in Types D and E, the Series 2 numerals appear in both ‘2’s of ‘2’-‘10’-‘2’. Thus, in Type D and E the use of the Series 2 numerals is not restricted to the U<sub>1</sub> slot, but it has extended to the U<sub>2</sub> slot. Thus, not only in terms of the number of the numbers that have two numerals, but also in terms of the extent of the slots where two series of numerals can appear, Type D and E appear to be more innovative.

## 2. Geographical distribution and interpretation

In all of the lects, most of the Series 1 numerals, except for numerals 1 and 10, are cognate to each other, and therefore, we can probably assume that Type A, which only has Series 1 numerals, is the most archaic type. If so, the other types are innovative in some way or other.

Types D and E have two series of numerals for numbers 1-9, the only difference between the two is that Type D only has one numeral for 10. Since the Series 2 numerals are Chinese loanwords, they have much more loanwords in the numeral system than other types do. These two types are distributed to the Eastern and Southern part of the whole distribution area. These two types must be the result of contact with Chinese occurring in the Eastern and Southern part of the distribution area.

Except for one Hmongic lect, Gaozhai, all the lects belonging to Types B, C, D, and E have two numerals for ‘2’. Thus, our data might suggest that the numeral for ‘2’ is the most vulnerable to borrowing.

(TANG Baiyan and TAGUCHI Yoshihisa)

Table 1: Two series of numerals in Xiaozhai.

	1	2	3	4	5	6	7	8	9	10
Series 1	<i>ze</i> <sup>3/4</sup>	<i>u</i> <sup>1</sup>	<i>pje</i> <sup>1</sup>	<i>pɔ</i> <sup>1</sup>	<i>pi</i> <sup>1</sup>	<i>tjo</i> <sup>5</sup>	<i>saj</i> <sup>6/8</sup>	<i>za</i> <sup>6/8</sup>	<i>tiu</i> <sup>2</sup>	<i>kɔ</i> <sup>6/8</sup>
Series 2	<i>ze</i> <sup>7</sup>	<i>ŋi</i> <sup>6/8</sup>	<i>luŋ</i> <sup>1</sup>	<i>lei</i> <sup>1</sup>	<i>ŋ</i> <sup>3/4</sup>	<i>lje</i> <sup>6/8</sup>	<i>tha</i> <sup>7</sup>	<i>pɔ</i> <sup>7</sup>	<i>kiu</i> <sup>5</sup>	<i>sje</i> <sup>6/8</sup>



# NUMERAL SYSTEMS IN HMONG-MIEN

— a decimal undercounting system



Figure 16.6.1: Numeral systems in Hmong-Mien.

NUMERAL SYSTEMS IN HMONG-MIEN



Figure 16.6.2: Types of two series of numerals in Hmong-Mien.

## Numeral systems in Kra-Dai

Numeral systems in Kra-Dai are all decimal (Figure 16.7.1), and the methods of counting are undercounting.

The typical numeral system of Kra-Dai is as follows:

(1)

U={1, 2, ..., 9}; B1=101=10;  
B2=102=100; B3=103=1000

11 to 19: B+U1

20 or more (up to 99): U2×B (+U1)

U1: adding number to B or U2×B

U2: multiplied number by B

(For convenience, the unit numbers are referred to as U1 and U2 depending on their relationship with the base number.)

The unit numbers consist of their own forms, ranging 1 to 9. The base number is 10, and each power of 10 has its own form. In 11 to 19, the base number precedes the unit number. For example, ‘twelve’ is ‘ten’ followed by ‘two’.

(2) ‘12’ in Sui

sup<sup>8</sup> ŋi<sup>6</sup>  
10 2

(Guangxi Zhuangzu Zizhiqu Shaoshu Minzu Yuyan Wenzhi Gongzuo Weiyuanhui 2008: 693)

For numbers 20 or greater, the base number is stated first. For example, ‘twenty-five’ is represented as ‘two’ times ‘ten’ plus ‘five’ in this order.

(3) ‘Twenty-five’ in Sui

ŋi<sup>6</sup> sup<sup>8</sup> ŋo<sup>4</sup>  
2 10 5

(ibid: 694)

The Kra-Dai numeral system is decimal. However, it is still possible to find some differences in the regularity. The decimal

Kra-Dai systems are classified into types A–E.

The most regular system is type A1. As in the Sui examples above, the word forms for U1 and U2 are the same.

Type A2 is still regular, but certain forms are restricted to the U1 or U2 positions. As in the example below, *ŋəi<sup>31</sup>* is exclusively used in the U2 position, and *səu<sup>31</sup>* only in the U1 position.

(4) ‘22’ in Gelao (Duoluo)

ŋəi<sup>31</sup> tɛəi<sup>24</sup> səu<sup>31</sup>

2(U2) 10 2(U1)

(ibid: 694)

Type B has a different form of the base number, which is considered a lenition form. In Lakkia, the base number ‘10’ (*tsep<sup>8</sup>*) is realized as *lep<sup>8</sup>* between unit numbers, while in Mulam, *səp<sup>8</sup>* alters to *sɿ<sup>6</sup>* between unit numbers.

(5) ‘15’, ‘25’ in Lakkia (Jinxiu)

tsep<sup>8</sup> ŋo<sup>4</sup> ‘15’

10 5

ŋi<sup>6</sup> lep<sup>8</sup> ŋo<sup>4</sup> ‘25’

2 10 5

(ibid: 693, 694)

(6) ‘20’, ‘21’ in Mulam (Luocheng)

ŋi<sup>6</sup> səp<sup>8</sup> ‘20’

2 10

ŋi<sup>6</sup> sɿ<sup>6</sup> ʔjət<sup>7</sup> ‘21’

2 10 1

(Zhongyang Minzu Xueyuan Shaoshu Minzu Yuyan Yanjiusuo Diwu Yanjiusuo ed. 1985: 161)

Type C exhibits irregularities in word order. In Gelao (Anshun), the unit number precedes a particle in the numbers 11–19.

(7) ‘11’, ‘21’ in Gelao (Anshun)

si<sup>33</sup> nen<sup>33</sup> pe<sup>24</sup> ‘11’  
 1 PRT? 10  
 su<sup>33</sup> pe<sup>24</sup> si<sup>33</sup> ‘21’  
 2 10 1

(He 1983: 90)

Type D does not use a base number to represent numbers greater than 20. In Zhuang of Wuming, ‘25’ is represented with only 2 and 5.

(8) ‘15’, ‘25’ in Zhuang (Wuming)

eip<sup>8</sup> ha<sup>3</sup> ‘15’  
 10 5  
 naj<sup>6</sup> ha<sup>3</sup> ‘25’  
 2 5

(Guangxi Zhuangzu Zizhiqu Shaoshu Minzu Yuyan Wenzhi Gongzuo Weiyuanhui 2008: 693, 694)

Type E is the most irregular one, which has a lexical form for ‘twenty’ as well as being a vigesimal language. In Tai Lue, the form of ‘20’ is lexical. However, the base number is still ‘10’ in ‘40’ and ‘60’. Luo (2008: 50) points out that ‘40’ and ‘60’ can also be expressed as ‘2 times 20’ and ‘3 times 20’, respectively. However, the data sources provide no instances where ‘30’ or ‘50’ were represented with the form ‘20’. Type E is an irregular decimal system, rather than a vigesimal system.

(9) ‘20’, ‘40’, ‘60’ in Tai Lue (Jinghong)

sau<sup>2</sup> nuu<sup>6</sup> ‘20’  
 20 1  
 cf. sau<sup>2</sup> ?et<sup>7</sup> ‘21’  
 20 1(U1)  
 si<sup>5</sup> sip<sup>7</sup> ‘40’  
 4 10  
 hok<sup>7</sup> sip<sup>7</sup> ‘60’  
 6 10

(Zhou and Luo 2001: 314)

The distribution of types A–E is shown in Figure 16.7.2. Type E is scattered on the western side of the map, while types A–D are located on the opposite side. All languages categorized as type E belong to the Southwestern Tai group.

Type E also includes other Southwestern Tai languages. Lao and Shan both use a lexical word for ‘20’. Meanwhile, in the Thai language, apart from the central dialect, the northeastern and northern dialects also lexically represent ‘20’.

(10) ‘20’ in Lao

ຊາວ sa:ɔ

(Kerr 1972: 509)

(11) ‘20’ in the dialects of Thai

(Northeastern, Northern):

๒๐ saao

(Tomita 1997: 484)

(12) ‘20’ in Shan

သဝ်း s<sup>h</sup>aaw4

(SEAlang Library Shan Dictionary)

The lexical form for ‘20’ should be considered a new element in Kra-Dai. Type E is only present in the Southwestern Tai languages and not in the rest. Tai is the last branch of the Kra-Dai family (Edmondson and Solnit 1988 and Norquest 2007). Furthermore, Southwestern Tai is situated at the bottom of the Tai language family tree (Pittayaporn 2009). The irregularity of having a lexical ‘20’ form is probably a new feature in the Kra-Dai languages. However, there is currently inadequate evidence as to how the lexical ‘20’ form was introduced into Southwestern Tai.

There are examples in the central Thai dialect and Chinese where ‘20’ has been contracted into a monosyllable (Mitsuaki

Endo, personal communication, March 22, 2023). A similar example is found in Tai Ya.

(13) Tai Ya (Yuanjiang)

ɦip<sup>7</sup> ʔet<sup>7</sup> ‘11’  
 ɕet<sup>10</sup> ‘11’ (contraction form)

(Zhou and Luo 2001: 313)

The word form of ‘20’ begins with *s-*, as does *soŋ*, the word for ‘2’. Thus, it is possible that the lexical form ‘20’ *saaw* may also be a contraction of *soŋ* and another form, though there are still no clues as to what the latter could be.

Figure 16.7.3 shows the distribution of ‘two’ in Kra-Dai. The classification of forms follows Endo (2022).

Type A has a *ŋi*-like form, which corresponds to the Chinese for ‘two’, while type C (*soŋ*) corresponds to the Chinese for ‘two, double, twin’. Types A and C are dominant. Note that many locations have

both A and C types. As for ‘two’, type C, which is common in Southwestern Tai, is also found widely in other languages except for those on Hainan island.

Figure 16.7.4 shows the distribution of the ‘2’ word form in ‘12’. The classification follows Endo (2022). Type C can be found in the western part of the map within the Southwestern Tai region, whereas type A is found in the eastern side of the map.

Figure 16.7.5 shows the distribution of ‘2’ word forms in ‘20’, limited to the analytic ‘20’ form. There are no locations where type C (*soŋ*) is used in the analytic form for ‘20’, which means that both type C and lexical ‘20’ are characteristic of Southwestern Tai.

(TOMITA Aika)

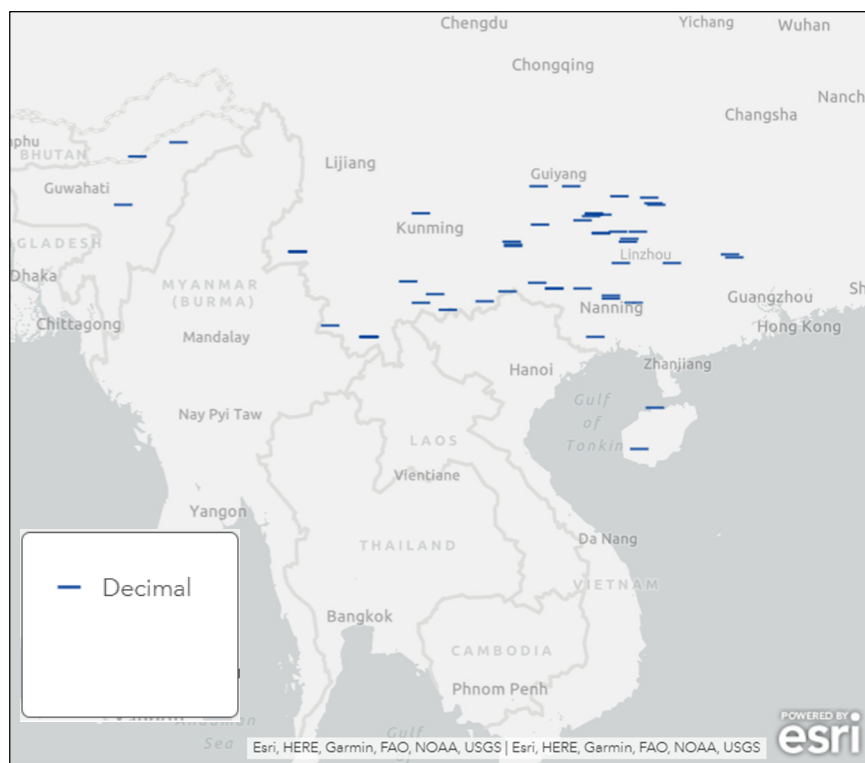


Figure 16.7.1: Numeral Systems in Kra-Dai.

## NUMERAL SYSTEMS IN KRA-DAI

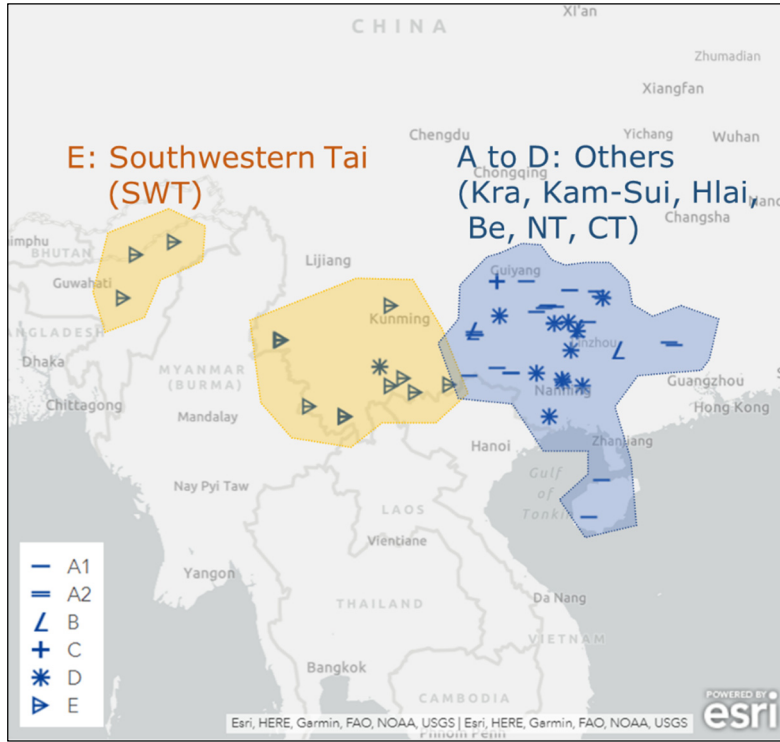


Figure 16.7.2: The map of classification by regularity.



Figure 16.7.3: ‘Two’ in Kra-Dai.

NUMERAL SYSTEMS IN KRA-DAI



Figure 16.7.4: The form of 'two' in 'twelve'.

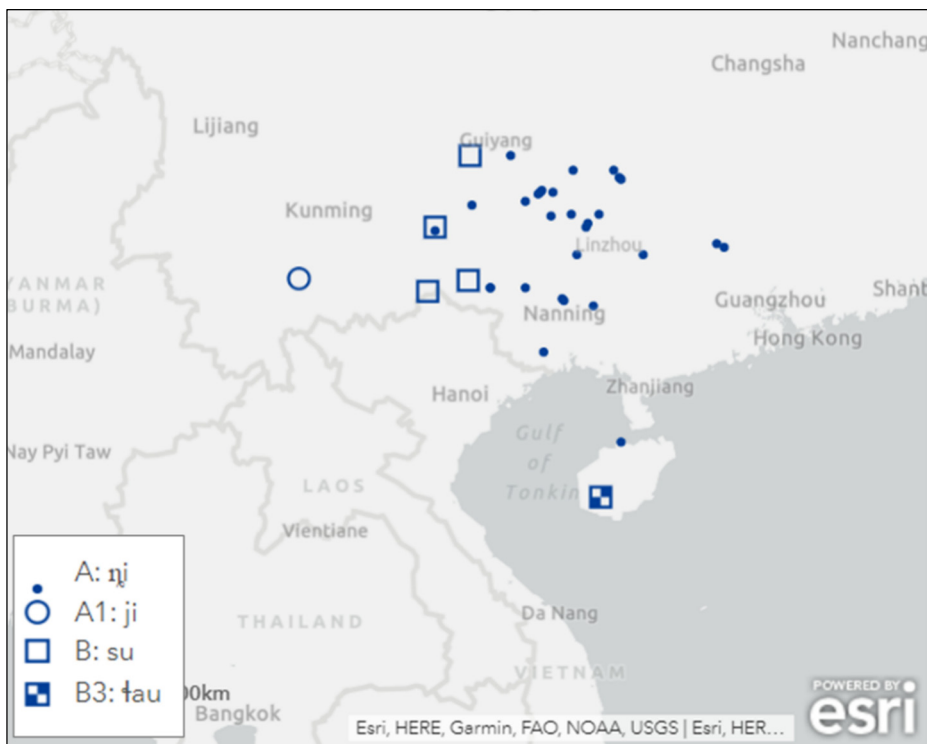


Figure 16.7.5: The form of 'two' in 'twenty'.

## Numeral systems in Tibeto-Burman

### 1. Classification

Tibeto-Burman (TB) languages show three main patterns in their numeral systems. Although the majority of these systems are decimal, we also find vigesimal and quinary systems. In addition, there are also several other types of counting patterns.

The decimal type is broadly found in all branches of TB. Some of these languages, especially the Loloish and Qiangic varieties, have irregular allomorphs, especially for ‘one’ and the first ten digits, as in (1). Matisoff (1997: 17, 24) noted that their frequency encouraged morphophonemic irregularities.

(1) Darmdo Minyag (Qiangic; Huang 1992)

tɕ <sup>53</sup> ‘one’	nə <sup>53</sup> ‘two’	so <sup>53</sup> ‘three’
fiæ <sup>33</sup> kə <sup>53</sup> ‘ten’	fiæ <sup>33</sup> ti <sup>53</sup> ‘eleven’	
fiæ <sup>33</sup> nə <sup>53</sup> ‘twelve’	ko <sup>33</sup> so <sup>53</sup> ‘thirteen’	
nə <sup>33</sup> kuə <sup>53</sup> ‘twenty’	sə <sup>33</sup> quə <sup>53</sup> ‘thirty’	

The vigesimal type is found in several subgroups of TB, namely, Kho-Bwa (or the “North Assam” Areal Group), Sal (including Northern Naga and Bodo-Garo), and Meithei, which Matisoff (2015: xxxii) terms as the N[orth]E[ast] Indian Areal Group; Tibeto-Kanauri (including Western Himalayish, Bodic, Tamangic, Dhimal, and Lepcha), Kiranti, and Newar, which he groups together as Himalayish. Typically, these languages have a base numeral for ‘twenty’ but show a decimal pattern for numbers under 20, as in (2).

(2) Byambab Tibetan (Bodic; Suzuki’s fieldnotes)

h <sup>h</sup> tei? ‘one’	fi <sup>h</sup> ŋi: ‘two’	fi <sup>h</sup> γə ‘four’
---------------------------	---------------------------	---------------------------

fi <sup>h</sup> kuw ‘nine’	t <sup>h</sup> ɑ: ba ‘ten’
h <sup>h</sup> tɕu h <sup>h</sup> tei? ‘eleven’	h <sup>h</sup> tɕu fi <sup>h</sup> ŋi: ‘twelve’
h <sup>h</sup> tɕu fi <sup>h</sup> γə ‘fourteen’	h <sup>h</sup> tɕu: fi <sup>h</sup> kuw ‘nineteen’
k <sup>h</sup> ɛ: ji ‘twenty’ (20 × 1)	
k <sup>h</sup> ɛ: ji h <sup>h</sup> tei? ‘twenty-one’	
k <sup>h</sup> ɛ: ji t <sup>h</sup> ɑ: ba ‘thirty’ (20 × 1 + 10)	
k <sup>h</sup> ɛ: fi <sup>h</sup> ŋi: ‘forty’ (20 × 2)	
k <sup>h</sup> ɛ: fi <sup>h</sup> γə ‘eighty’ (20 × 4)	
k <sup>h</sup> ɛ: fi <sup>h</sup> γə t <sup>h</sup> ɑ: ba ‘ninety’ (20 × 4 + 10)	

Moreover, some languages, such as Garo, Dzongkha, Purik, and Dolakha Newar, exhibit a double system for numbers 20 and more that is decimal and vigesimal. As Matisoff (1995: 149) noted, the vigesimal system is apparently older in these languages. In addition, as he also mentioned (Matisoff 1995: 149–153), several languages that have decimal-type basic systems have monomorphemic (or unanalyzable into ‘ten’ and ‘two’) word forms for ‘twenty’. We find such examples in various subgroups as Kuki-Chin, Bodo-Garo, Jingpho-Asakian, Angami-Pochuri, Tangkhulic, and Nungish, although they are marked as simply decimal in our map.

Previous studies have observed that the similarity of \*g-nis ‘two’ and \*s-nis ‘seven’ in Proto-TB suggests a quinary basis at an earlier stage (Benedict 1972: 93). The word forms for ‘two’ and ‘seven’ are quite similar in many languages, e.g., nDrapa nĕ- ‘two’ and nĕ- ‘seven’. However, focusing on synchronic systems, only a few languages of the Kiranti and Karenic groups in our data have a quinary type. These languages typically use a morpheme for ‘hand’ to denote ‘five’, as in (3). (3) also exemplifies undercounting (3 + 1 denotes



‘four’) and back-counting (10 – 1 denotes ‘nine’).

(3) Yakkha (Kiranti; Gvozdanović 1985: 137, cited by Matisoff 1997: 80; the hyphens are added by us)

kolok ‘one’ hitci ‘two’ sumji ‘three’  
 sumcibi usongbi kolok ‘four’ (3 ‘plus’ 1)  
 muktapi ‘five’ (‘hand’)  
 muktapi usongbi kolok ‘six’  
     (‘hand’ ‘plus’ 1)  
 muktapi usongbi hitci ‘seven’  
     (‘hand’ ‘plus’ 2)  
 muktapi usongbi sumci ‘eight’  
     (‘hand’ ‘plus’ 3)  
 muk-curukbi kolok hongbi ‘nine’  
     (‘hand’-PL 1 ‘minus’)  
 muktapi hita ‘ten’ (‘hand’ ×2)  
 lang-curuk-muk-curuk ‘twenty’  
     (‘foot’-PL-‘hand’-PL)

TB languages also exhibit multiple ways of counting, such as double-counting, overcounting, and back-counting, as well as undercounting. We mark the map with an “other” symbol when these patterns are seen.

Some of the Karenic languages use quinary-based double-counting patterns. They have different forms for the numbers ‘one’ to ‘five’ and digit words, but they use double-counting from ‘six’ to ‘nine’ as in (4).

(4) Eastern Kayah Li (Karenic; Solnit 1997: 204–206)

tə- ‘one’      n̄l ‘two’      s̄o ‘three’  
 lwī ‘four’      ŋē ‘five’  
 s̄o swá ‘six’ (3 ‘to double’)  
 s̄o swá tə- ‘seven’ (3 ‘to double’ +1)  
 lwī swá ‘eight’ (4 ‘to double’)

lwī swá tə- ‘nine’ (4 ‘to double’ +1)  
 chál ‘ten’

chál s̄o swá ‘sixteen’ (10 × [3 ‘to double’])  
 chál s̄o swá tə- ‘seventeen’ (10 [3 ‘to double’ + 1])

n̄l ch̄l ‘twenty’ (2 × 10)

ch̄l s̄o swá ‘sixty’ (10 × 3 ‘to double’)  
 s̄o swá təch̄l ‘seventy’

(3 ‘to double’ 1 × 10)

ch̄l lwī swá ‘eighty’ (10 × 4 ‘to double’)

The Ao (Central Naga) and Angami-Pochuri languages had overcounting systems in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, although it was replaced with decimal undercounting after contact with missionaries (Coupe 2012). For example, Ao dialects had a decimal-based undercounting system from ‘one’ to ‘fifteen’, but from ‘sixteen’ to ‘nineteen’, they used a vigesimal-based overcounting system, as in (5). Above ‘twenty’, they used undercounting until ‘X-ty-five’, and then returned to the overcounting pattern again until ‘X-ty-nine’.

(5) Mongsen Ao (Central Naga; Mills 1926, cited by Coupe 2012: 205–206)

āk̄hā ‘one’      ānēt ‘two’      tērök ‘six’  
 terā ‘ten’  
 terā ānēt ‘twelve’  
 mükyi müpen tērök ‘sixteen’ (20 ‘not completed’ six)  
 mükyi ‘twenty’

Karbi, which is spoken in Northeast India, exhibits both undercounting (6 + 1 for ‘seven’) and back-counting (2-R-10 and 1-R-10 for ‘eight’ and ‘nine’, respectively) (Konnerth 2014). We also find examples of back-counting for ‘eight’ and ‘nine’ in

Meithei, ‘nine’ in Mising (North Assam), and ‘thirty-nine’ in Magar (Kham-Magar-Chepong).

Dhimal (Western Himalayish) shows a complex undercounting pattern, where: ‘eleven’ is  $8 + 3$ , from the numbers ‘thirteen’ to ‘fifteen’ are 12 plus 1, 2, and 3, respectively, and from ‘seventeen’ to ‘nineteen’ are 16 plus 1, 2, and 3, respectively (King 2009).

We also find broad lexical borrowing in TB numerals. Many of the languages spoken in Nepal use Nepali numerals to refer to large numbers: for example, from ‘six’ in Magar (Kham-Magar-Chepong), from ‘four’ in Yakkha, Belhare, and Camling (Kiranti), and all numerals in Chantyal (Tamangic) and Sunwar (Kiranti). (Note that Gvozdanović [1985] described the Yakkha native numerals of Yakkha as in example (3) above, but Schackow [2015] reported that Yakkha speakers use loanwords for ‘four’ and above.) Among these, Magar uses Nepali morphemes for its vigesimal system for 20 and larger numbers. Several languages in the Southeast Asian linguistic area use Tai loans: for example, the numbers from ‘eleven’ to ‘nineteen’ in Xiandao (Burmish) and for ‘five’ and up in Kadu (Sal). Some Qiangic languages, such as Yutong Gochang, use both indigenous and Tibetan loan numerals.

## 2. Geographical distribution and interpretation

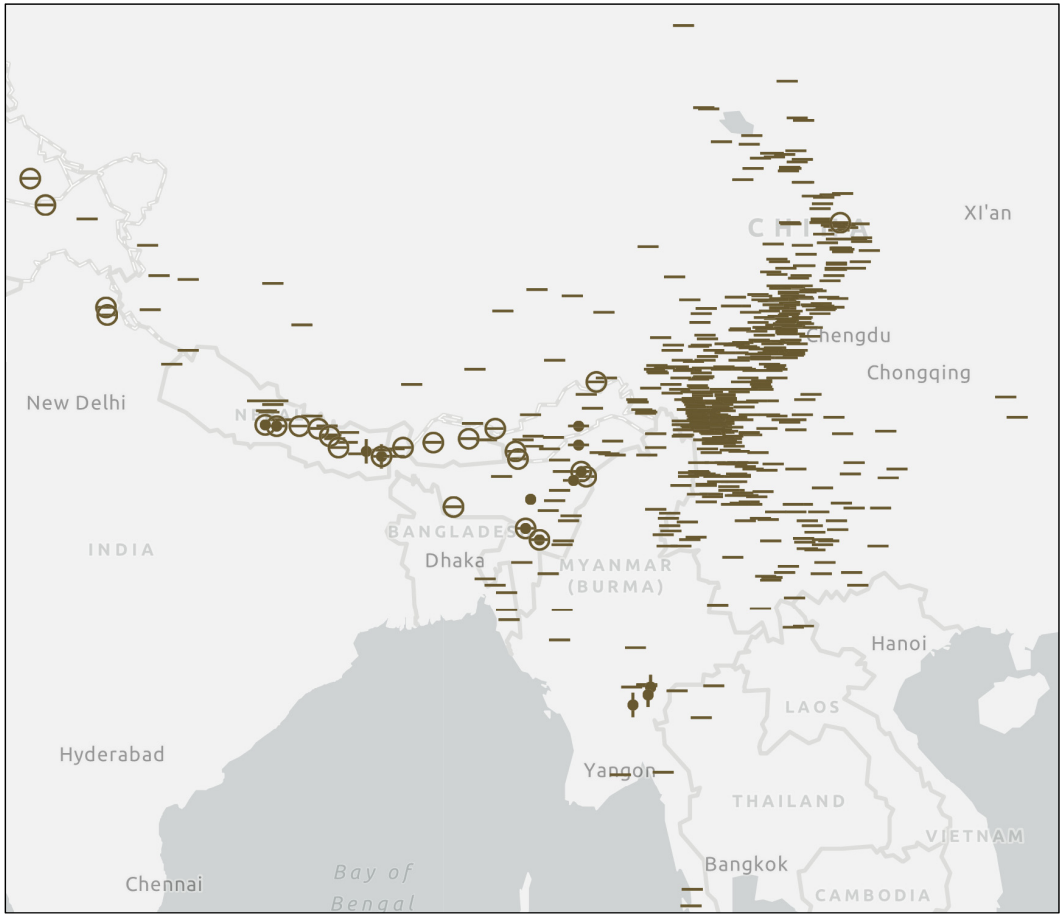
Figures 1 and 2 present the geographical distributions of numeral systems in TB. Figure 2 provides an enlarged map that covers all occurrences of nondecimal types. TB numeral systems exhibit various patterns, but their diversity is geographically limited.

Decimal systems are widespread and can be found across the entire area. It should be noted that most languages that have different systems also have a partial or in parallel decimal system. The vigesimal is the second most widespread type of numeral system. It is distributed around the Himalayas, especially in the northern peripherals of the Indian subcontinent. Moreover, an enclave distribution appears in Northwestern China. Quinary systems are limited to Eastern Nepal and around Myanmar’s Kayah State.

It is difficult to ascertain the relative chronology of decimal and vigesimal systems from a geolinguistic viewpoint. Although decimal systems are widespread, these might be borrowed from a major language such as Chinese. However, judging from their limited distributions, we can conclude that nondecimal and nonvigesimal types of numerals in TB languages are relatively new.

(SHIRAI Satoko, KURABE Keita,  
EBIHARA Shiho, IWASA Kazue, and  
SUZUKI Hiroyuki)

NUMERAL SYSTEMS IN TIBETO-BURMAN



Esri, Garmin, FAO, NOAA, USGS

- Decimal
- Vigesimal
- | Quinary
- Other

Figure 16.8.1: Numeral systems in Tibeto-Burman.

NUMERAL SYSTEMS IN TIBETO-BURMAN

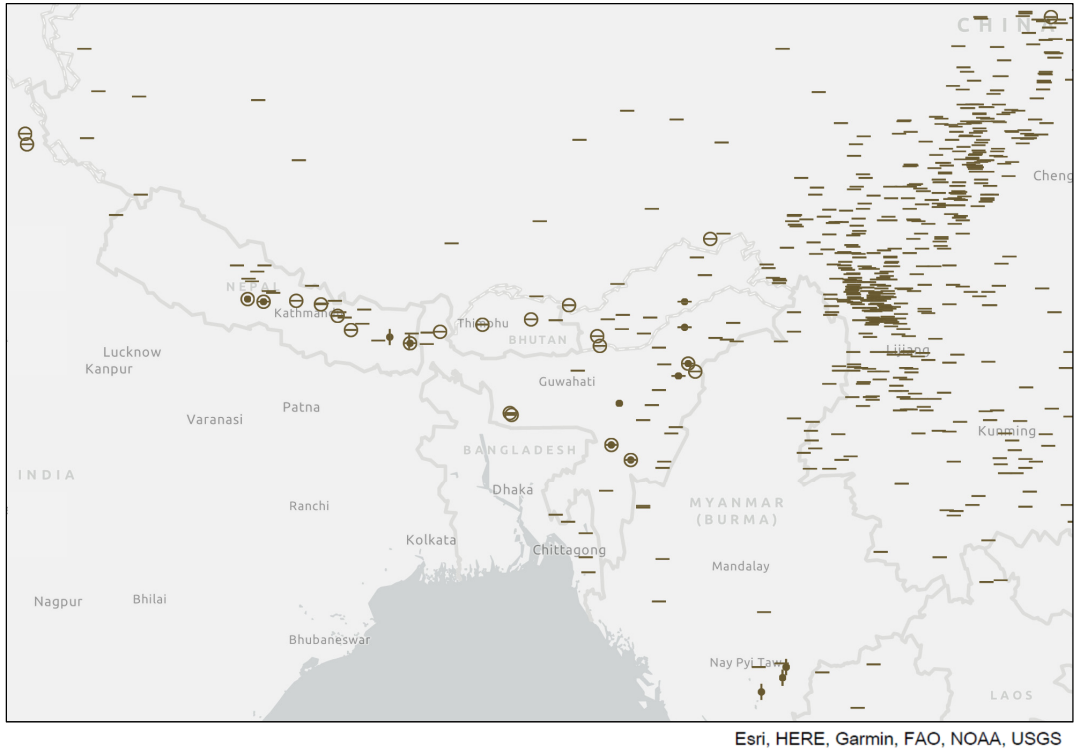


Figure 16.8.2: Numeral systems in Tibeto-Burman: enlarged.

## Numeral systems in Austroasiatic

Decimal types are predominant across the Indian subcontinent and mainland Southeast Asia. Some languages in the Munda family in India, however, have a basic decimal system but use a vigesimal system for numerals above twenty.

Khmer, in Cambodia, is exceptional in that it is the only language in the whole language family that uses the quinary system. The existence of the numeral ‘*ma-phey*’ for “twenty,” made of a combination of ‘*ma-*,’ the short form of ‘*muay*’ for “one,” and ‘*phey*’ of unknown origin, might be a

remnant of a vigesimal system. It is not certain whether Khmer once had a vigesimal system since the numerals from thirty to ninety, a hundred, a thousand, ten thousand, a hundred thousand, and those in the millions are all borrowed from its language neighbor, Thai.

(MINEGISHI Makoto,  
SHIMIZU Masaaki)

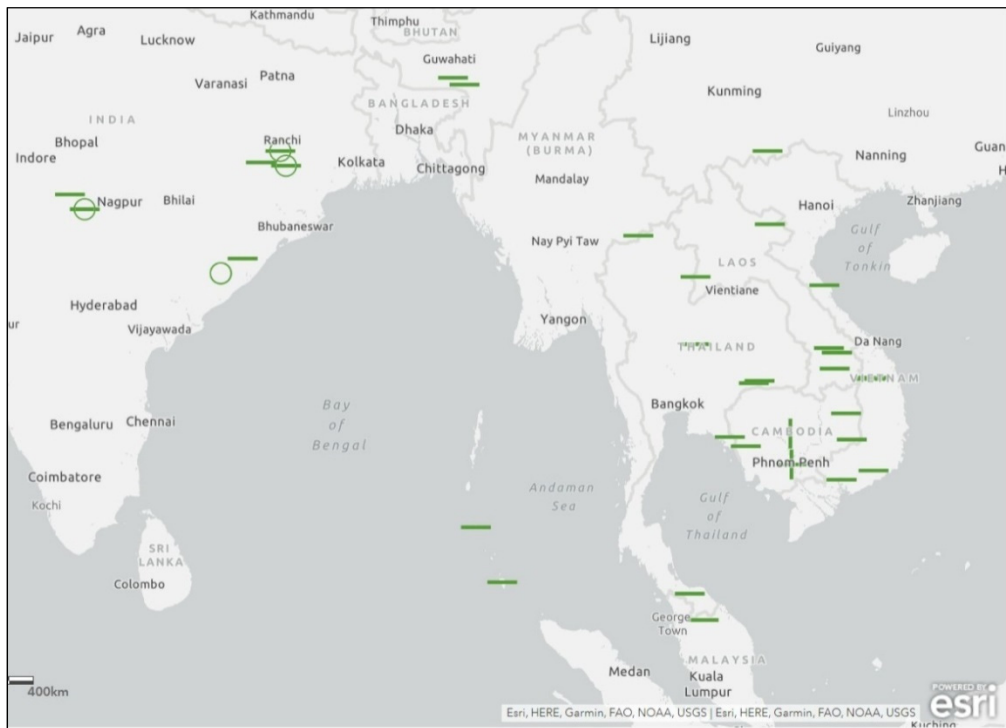


Figure 16.9.1: Numeral systems in Austroasiatic.

┆ Quinary Type    — Decimal Type    ○ Vigesimal Type

## Numeral Systems in Austronesian

### 1. Classification

Numeral systems in the Proto-Austronesian (PAn) language are reconstructed as decimal systems (Blust 2009:268–274). This system is widespread in the Austronesian world and features easily recognizable cognates. It can also be traced to various lower nodes of the Austronesian tree, such as the Proto-Oceanic (POC) language (Schapper & Hammarström 2013). PAn numerals are as follows: “one” \**esa/isa*, “two” \**duSa*, “three” \**telu*, “four” \**Sepat*, “five” \**lima*, “six” \**enem*, “seven” \**pitu*, “eight” \**walu*, “nine” \**Siwa*, and “ten” \**sa-puluq*. POC numerals are similar: “one” \**ta-sa*, (*sa*)-*kai*, “two” \**rua*, “three” \**tolu*, “four” \**pat(u)*, “five” \**lima*, “six” \**onem*, “seven” \**pitu*, “eight” \**walu*, “nine” \**siwa*, and “ten” \**sa-[ŋa]-puluq*. Therefore, decimal systems reflecting either PAn or POC forms are prevalent in Austronesian-speaking regions.

The quinary system is observed in the Flores, Lembata, and Timor islands, which have had close contact with Papuan languages. However, Sagart (2004) suggests that the numerals 5–10 did not exist in PAn. In Formosan languages, these numbers exhibit additive, multiplicative, or subtractive forms. For example, the Pazeh word for six is *xaseb-uza*, which means 5 + 1; the Sediq word for six is *materu*, which is based on three (\**telu*), and eight is *maspat*, based on four (\**Sepat*); further, nine in Sediq is *maŋali*, which means “to take (from ten).” Subsequently, decimal system was introduced into these languages.

Languages of the New Guinea mainland exhibit a wide range of innovations, including quinary, quinary/decimal, vigesimal, and quinary/vigesimal systems, which were possibly developed due to contact with Papuan languages; the latter “are best known in the typological literature on numerals for having body-part tally systems and, to a lesser extent, restricted numeral systems which have no cyclically recurring base” (Schapper & Klamer 2014). In the Pacific islands, the prevalence of quinary/decimal and quinary/vigesimal systems in New Caledonia and Vanuatu is also believed to be the result of language contact.

- A Decimal Type
- B Quinary Type
- C Quinary/Decimal Type
- D Vigesimal Type
- E Quinary/Vigesimal Type

### 2. Geographical distribution

A) The decimal system is found throughout Austronesian-speaking regions, excluding some regions in the Pacific and Papua New Guinea. It is almost exclusively found in Taiwan, the Philippines, and the Indonesian islands of Sulawesi, Sumatra, and Java.

B) The quinary system is often found in the Vanuatu islands in the Pacific and at the Pacific tip of Papua New Guinea.

C) The quinary/decimal system is found in Papua New Guinea and Vanuatu.

D) The vigesimal system is used in a single language in Waropen Kai, spoken in Indonesian Papua.

NUMERAL SYSTEMS IN AUSTRONESIAN

E) The quinary/vigesimal system is prevalent in Papua New Guinea and New Caledonia.

(UTSUMI Atsuko)

- A: Decimal Type
- Vigesimal Type
- | B: Quinary Type
- ⊖ Quinary/Vigesimal Type
- + C: Quinary/Decimal Type

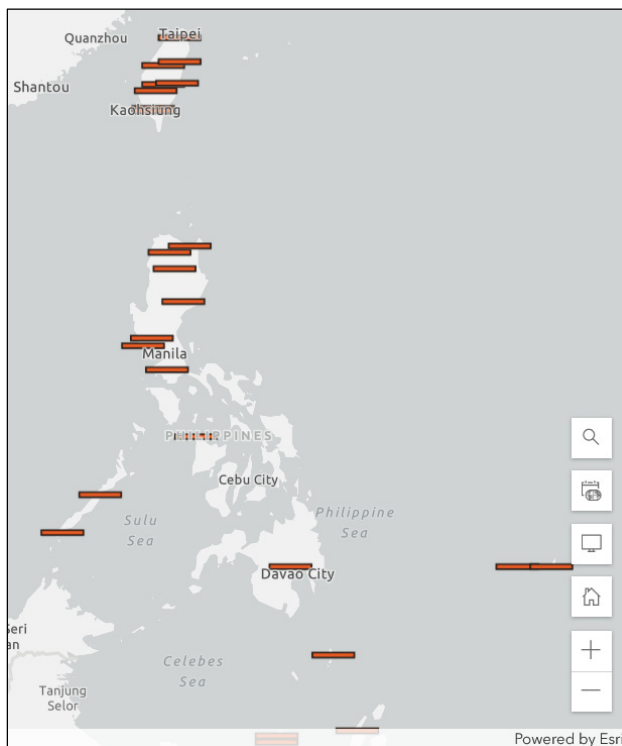


Figure 16.10.1: Numeral systems in Austronesian (Taiwan and Northern Philippines).

## NUMERAL SYSTEMS IN AUSTRONESIAN

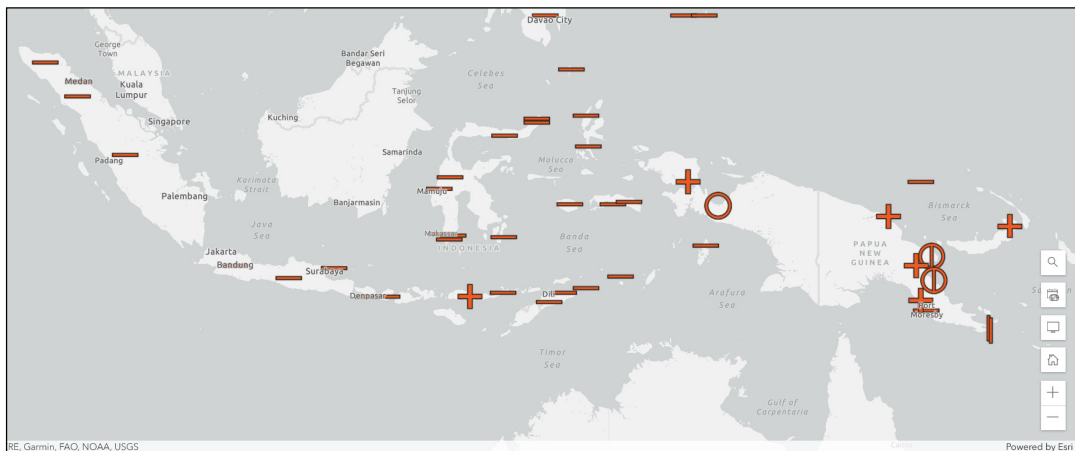


Figure 16.10.2: Numeral systems in Austronesian (Southern Philippines, Indonesia, and Papua New Guinea).



Figure 16.10.3: Numeral systems in Austronesian (Solomon Islands, Vanuatu, New Caledonia, and other Pacific islands).



## Numeral systems in Tungusic

### 1. Classification

All Tungusic languages have basically the decimal system. There are Unit Numbers from ‘1 to 9’ and have ‘10’ as Base Number.

Table 1: Unit and Base Numbers in Evenki

1	<i>umun</i>	6	<i>ñuŋun</i>
2	<i>ǰūr</i>	7	<i>nadan</i>
3	<i>ilan</i>	8	<i>ǰapkun</i>
4	<i>digin</i>	9	<i>ǰegin</i>
5	<i>tunŋa</i>	10	<i>ǰān</i>

In counting numbers above 11, all languages have undercounting system, for example in Evenki:

11 *ǰān umun*

12 *ǰān ǰūr*

13 *ǰān ilan* ...and so on

For counting over 20, in Evenki they use multiple of 10 and Unit Numbers by the undercounting system:

20 *ǰūr ǰār* (\**ǰār* is plural form of *ǰān*)

21 *ǰūr ǰār umun*

30 *ilan ǰār*

40 *digin ǰār*

45 *digin ǰār tunŋa*

Therefore, all Tungusic languages are belonging to one type.

— Type A (Decimal Type)

From 1 to 10: Decimal Type

From 10 to 20: Decimal Type

Above 20: Decimal Type

In the next section I try to subgroup this basic type.

### 2. Distribution of the types in Tungusic

As mentioned Tungusic languages have the consistent decimal system, but some languages have not derived forms for 20, 30, 40 and 50, and there is a kind of the implicit hierarchy.

A1: Evenki, Ewen which have only multiple 10 forms (only compound forms).

A2: Negidal, Udehe, Oroch have the non-derived form for 20.

A3: Oroch has words for 20, 30.

A4: Solon, Orochon have words for 20, 30, 40.

A5: Nanay, Ulich, Hezhe, Sibe have words for 20, 30, 40 and 50.

These words must have been borrowed from Mongolic – in Khalkha 20 *xor'*, 30 *guč*, 40 *dəč*, but 50 *taw'* is not correspond to *sosaj*. which came from another language.

(MATSUMOTO Ryo)

Table 2: Classification by the word formation of 10-60

	A1	A2	A3	A4	A5
	Evenki	Udehe	Oroch	Solon	Nanay
10	<i>ǰān</i>	<i>ǰā</i>	<i>ǰā</i>	<i>dzaaŋ</i>	<i>ǰoan</i>
20	<i>ǰūr ǰār</i>	<i>waji</i>	<i>oi</i>	<i>ɔriŋ</i>	<i>xorin</i>
30	<i>ilan ǰār</i>	<i>ila-ǰā</i>	<i>guti</i>	<i>gɔtiŋ</i>	<i>goč'in</i>
40	<i>digin ǰār</i>	<i>dī-ǰa</i>	<i>di-ñǰā</i>	<i>dəxi</i>	<i>dəxi</i>
50	<i>tunŋa ǰār</i>	<i>tunŋa-ǰa</i>	<i>tunŋa-ñǰā</i>	<i>təŋ-ŋe</i>	<i>sosaj</i>
60	<i>ñuŋun ǰār</i>	<i>ñuŋu-ǰə</i>	<i>ñuŋu-ñǰa</i>	<i>niŋuŋ-ŋe</i>	<i>ñunŋu-iŋu</i>

## NUMERAL SYSTEMS IN TUNGUSIC



Figure 16.11.1: Numeral systems in Tungusic.

— Type A (Desimal)

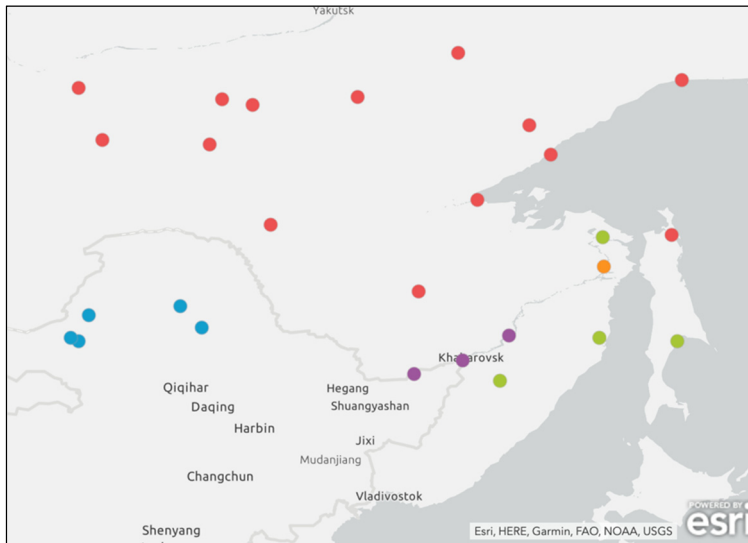


Figure 16.11.2: Distribution of Forms for Numerals 20, 30, 40 and 50.

- A1
- A2
- A3
- A4
- A5

## Numeral systems in Uralic

### 1. Classification

Uralic languages have basically the decimal system.

Type A (Decimal Type)

From 1 to 10: Decimal

From 10 to 20: Decimal

Above 20: Decimal

For example, 1-10 number are shown in Table 1:

Table 1 Examples of 1-10 numbers

	Finnish	Erzya	Nenets
1	<i>yksi</i>	<i>vejke</i>	<i>ŋobʔ</i>
2	<i>kaksi</i>	<i>kavto</i>	<i>sidʹa</i>
3	<i>kolme</i>	<i>kolmo</i>	<i>ñaxar</i>
4	<i>neljä</i>	<i>nile</i>	<i>tʹet</i>
5	<i>viisi</i>	<i>vete</i>	<i>samlʹang</i>
6	<i>kuusi</i>	<i>koto</i>	<i>matʔ</i>
7	<i>seitsemän</i>	<i>sisem</i>	<i>siʔiv</i>
8	<i>kahdeksan</i>	<i>kavkso</i>	<i>sidndʹet</i>
9	<i>yhdeksän</i>	<i>vejko</i>	<i>xasujuʔ</i>
10	<i>kymmenen</i>	<i>kemenʹ</i>	<i>juʔ</i>

As often referred, Uralic number has partially back-counting system in ‘8’ and ‘9’. 8 consists of ‘lacking 2 from 10’, and 9 ‘lacking 1 from 10’. Therefore number ‘8’ includes morpheme for ‘2’, and ‘9’ include ‘1’.

From 11 to 20, the numbers consist of Unit Number {1-9} and Base Number {10}; for example, in Finnish 11 *yksi-toista* ‘one-over\_ten’: in Erzya 11 *ke-vejke* ‘ten-one’: in Nenets 11 *ŋobʔ jangña* ‘one extra’. The order of Unit Number and Base Number is not common.

Over 20 consist of Unit Number and Base Number: for example, in Finnish 30 *kolmekymmentä* ‘three tens (sg.partitive)’: in Erzya *kolonʹ-gemenʹ* ‘three-ten’ (juxtaposition compound): in Nenets *nʹaxar juʔ* ‘three ten (sg).

### 2. The form for 20

Most of Uralic languages, except Balto-Finnic and Samoyedic, have a special form for 20, instead of ‘two-ten’ using Unit Number and Base Number.

Ugric: Hungarian *húsz*, Khanty *xus*, Mansi *χus*

Volga-Finnic: Mari *kolo*, Erzya *komsʹ*

Permic: Komi *kiz*, Udmurt *kizʹ*

These forms are phonetically very similar each other; it might be old borrowing from a neighboring language.

(MATSUMOTO Ryo)

## NUMERAL SYSTEMS IN URALIC

— Type A (Decimal)

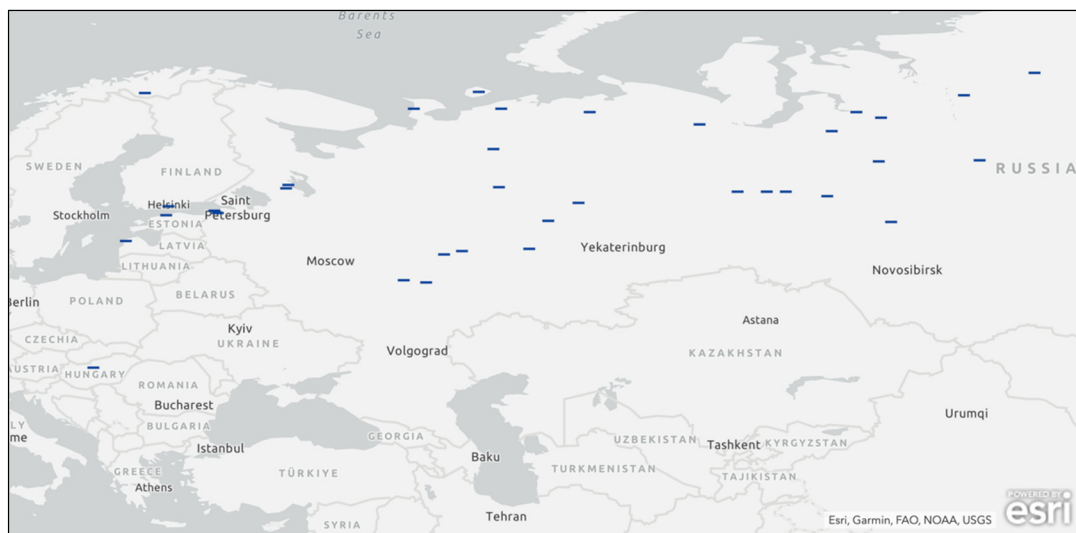


Figure 16.12.1: Numeral systems in Uralic.

## Numeral systems in Mongolic and Turkic

### 1. Mongolic

#### 1.1 Counting systems

##### 1.1.1 Decimal system

All Mongolic languages basically use a decimal undercounting numeral system, but have no specific morpheme for the base number ‘ten.’ E.g.,

Mongol:

‘2’ <i>xojor</i>	‘20’ <i>xori</i>
‘3’ <i>gurəb</i>	‘30’ <i>guči</i>
‘4’ <i>dörəb</i>	‘40’ <i>döči</i>
‘5’ <i>tab</i>	‘50’ <i>tabi</i>
‘6’ <i>ǰurgā</i>	‘60’ <i>ǰar</i>
‘7’ <i>dolō</i>	‘70’ <i>dal</i>
‘8’ <i>naim</i>	‘80’ <i>naj</i>
‘9’ <i>jös</i>	‘90’ <i>jer</i>

##### 1.1.2 Other systems

The Moghol language in Afghanistan has some characteristics that are not shared with the other Mongolic languages.

##### 1.1.2.1 Vigesimal system

First, Moghol partly uses a vigesimal system. (Blažek 2020) E.g.,

Moghol:

	Form	Structure
‘30’	<i>qurban arban</i>	3×10
‘40’	<i>qiar qori</i>	2×20
‘50’	<i>tabun arban</i>	5×10
‘60’	<i>qurban qori</i>	3×20
‘70’	<i>qurban qori arban</i>	3×20+10
‘80’	<i>durban qori</i>	4×20
‘90’	<i>durban qori arban</i>	4×20+10

##### 1.1.2.2 Quinary system

Second, it partly uses a quinary system that employs the word *ǰar*, meaning ‘hand.’ (Blažek 2020) E.g.,

Moghol:

‘8’	<i>nikān ǰar ǰurbōn oāda</i>
	one hand three up
‘9’	<i>nikān ǰar durbōn oāda</i>
	one hand four up

##### 1.1.2.3 Back-counting system

Third, it uses a back-counting system for 8, 9, 18, and 19. (Blažek 2020) E.g.,

Moghol:

	Form	Structure
‘8’	<i>arban qiar uskan</i>	10–2
	10 2	
‘19’	<i>qorin-asa nika uskan</i>	20–1
	20-ABL 1	

### 1.2 Order of digits

Different from the other Mongolic languages, in Moghol, the ones place precedes the tens place for the numerals from 11 to 19. (Iwamura et al. 1961) E.g.,

Moghol:

	Form	Structure
‘11’	<i>nikarbān</i>	<i>nika</i> ‘1’ + <i>arban</i> ‘10’
‘13’	<i>ǰurarbān</i>	<i>ǰurbān</i> ‘3’ + <i>arban</i> ‘10’
‘17’	<i>dolarbān</i>	<i>dolon</i> ‘7’ + <i>arban</i> ‘10’

### 1.3 Loanwords and calques

The languages in the Gansu and Qinghai provinces in China are influenced by Chinese and Tibetan. Dongxiang uses Chinese loanwords for 11 and above. In Kangjia, the decade numbers from 20 to 90 are probably calqued on the corresponding Chinese expressions. A dialect of Bao’an uses Tibetan loanwords for 30 and above.

Moghol in Afghanistan uses Persian loanwords. (Blažek 2020)

## 2. Turkic

### 2.1 Decimal system

Most Turkic languages basically use a decimal undercounting numeral system, but the words for ‘40’ and ‘50’ have no etymological connection with those for ‘4’ and ‘5.’ They also have no specific morpheme for the base number ‘ten.’ E.g.,

Modern Uighur:

‘2’ <i>ikki</i>	‘20’ <i>jigirme</i>
‘3’ <i>üç</i>	‘30’ <i>ottuz</i>
‘4’ <i>töt</i>	‘40’ <i>qiriq</i>
‘5’ <i>beş</i>	‘50’ <i>ellik</i>
‘6’ <i>alte</i>	‘60’ <i>atmiş</i>
‘7’ <i>jette</i>	‘70’ <i>jetmiş</i>
‘8’ <i>sekkiz</i>	‘80’ <i>seksen</i>
‘9’ <i>toqquz</i>	‘90’ <i>toqsan</i>

In Sarıg Yughur in the Gansu province, Shor, Sakha, and Dolgan in Siberia, decade numbers from 40 to 90 are expressed with a simple combination of a unit number and the base number ‘ten.’ (Li 2011, Blažek 2020). E.g.,

Dolgan:

Form	Structure
‘40’ <i>tüörduon</i>	<i>tüört</i> ‘4’ × <i>uon</i> ‘10’
‘50’ <i>biehuon</i>	<i>bies</i> ‘5’ × <i>uon</i> ‘10’
‘60’ <i>alta uon</i>	<i>alta</i> ‘6’ × <i>uon</i> ‘10’

The numerals for decade numbers from 30 to 90 in Tuvan and those from 20 to 90 in Tofa also have the same structure. However, the elements are merged into one form by harmonizing the vowel in the word for ‘10.’ E.g.,

Tuvan:

Form	Structure
‘50’ <i>bežen</i>	<i>beş</i> ‘5’ × <i>on</i> ‘10’
‘60’ <i>aldan</i>	<i>aldi</i> ‘6’ × <i>on</i> ‘10’

### 2.2 Vigesimal system

For decade numbers from 30 to 90, Karachay and Balkar in Caucasus utilize both (a) decimal and (b) vigesimal systems. (Tavkul 2000) E.g.,

Karachay and Balkar:

	Form (a)	Form (b)	Structure of (b)
‘30’	<i>otuz</i>	<i>jjirma bla on</i>	20+10
‘40’	<i>kirk</i>	<i>eki jjirma</i>	2×20
‘50’	<i>elli</i>	<i>eki jjirma bla on</i>	2×20+10
‘60’	<i>altmiş</i>	<i>üç jjirma</i>	3×20
‘70’	<i>jetmiş</i>	<i>üç jjirma bla on</i>	3×20+10
‘80’	<i>seksan</i>	<i>tört jjirma</i>	4×20
‘90’	<i>toxsan</i>	<i>tört jjirma bla on</i>	4×20+10

### 2.3 Quinquagesimal system

For decade numbers from 60 to 90, Salar in Gansu and Qinghai utilizes numerals in both (a) decimal and (b) fifty-based systems. (Lin 1985, Blažek 2020) E.g.,

Salar:

	Form (a)	Form (b)	Structure of (b)
‘60’	<i>ahmuş</i>	<i>elli on</i>	50+10
‘70’	<i>jehmuş</i>	<i>elli jiyirme</i>	50+20
‘80’	<i>sexsen</i>	<i>elli odtus</i>	50+30
‘90’	<i>toxsen</i>	<i>elli gerax</i>	50+40
‘61’	<i>ahmuş bär</i>	<i>elli on bär</i>	50+10+1

Khalaj in Iran also has a fifty-based system for 60 to 90 along with Persian loanwords. (Doerfer 1988)

### 2.4 Overcounting system

Sarıg Yughur uses an overcounting system for 11-19 and 21-29. The same system is found in Old Turkic. (Miao 2019, Tekin 1968) E.g.,

Sarıg Yughur:

	Form	Old Turkic form	Structure
‘11’	<i>bär jiyärmä</i>	<i>bir jegirmi</i>	1, 20
‘19’	<i>doqşi jiyärmä</i>	<i>toquz jegirmi</i>	9, 20
‘23’	<i>uşdo ohtus</i>	<i>üç otuz</i>	3, 30
‘27’	<i>jidä ohtus</i>	<i>jiti otuz</i>	7, 30

**3. Distribution and interpretation**

Mongolic and Turkic languages basically use a decimal undercounting system. However, several languages in peripheral regions partially employ other systems,

which may, at least in some cases, be due to the influence of adjacent languages.

(SAITÔ Yoshio)

Decimal type	—	Mongolic
	—	Turkic
Vigesimal type	○	Mongolic
	○	Turkic
Other	●	Mongolic
	●	Turkic

NUMERAL SYSTEMS IN MONGOLIC AND TURKIC

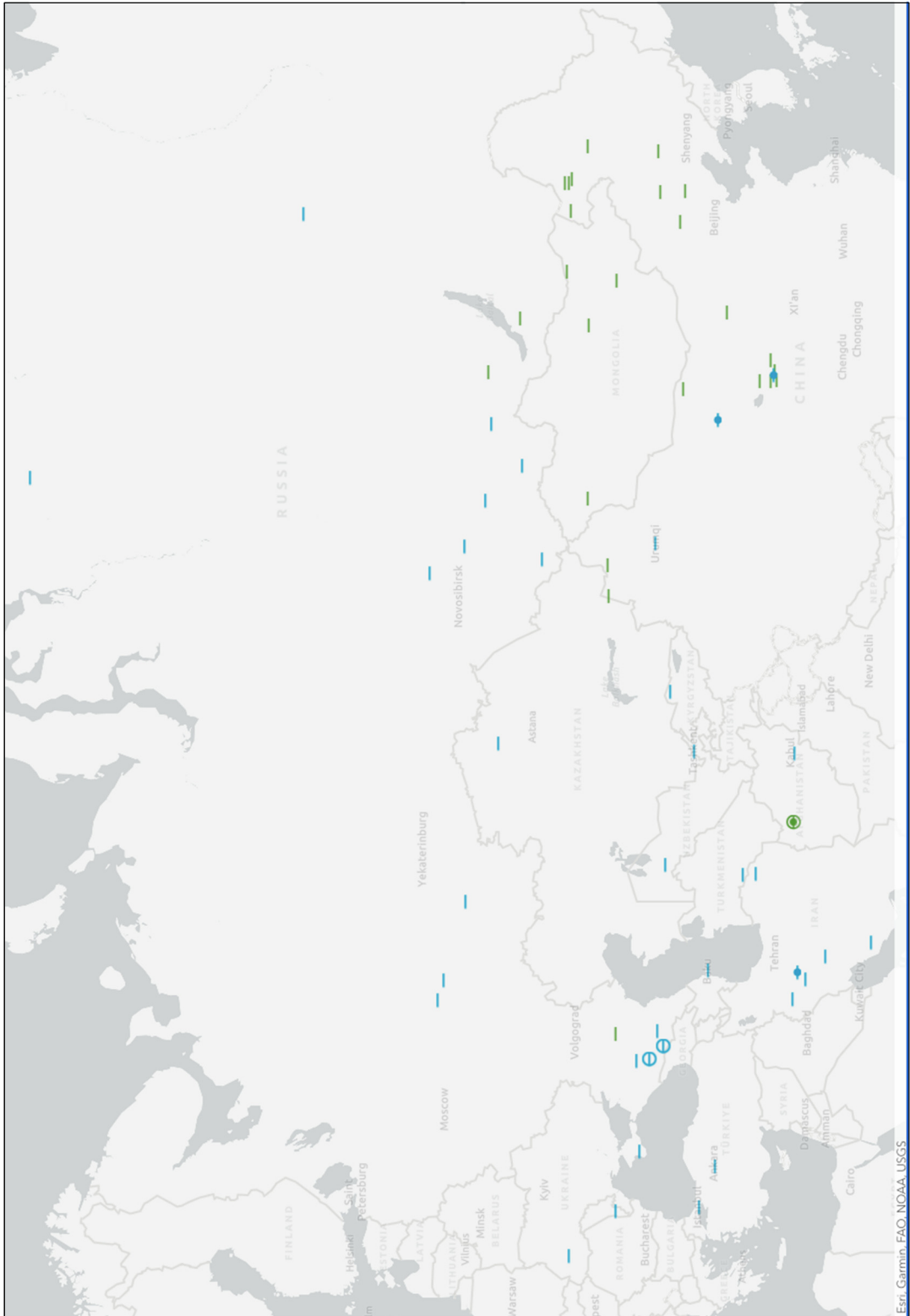


Figure 16.13.1: Numeral Systems in Mongolic and Turkic.



## Numeral systems in South Asia

I describe the languages of Indo-Aryan (IA), some small language families/branches, and language isolates in South Asia.

In these maps, numeral systems are classified as six types: Binary, Quinary, Decimal, Vigesimal, Quinquagesimal, and Anumeric. Some languages have complex systems in combination of decimal and other notation; For the languages symbols of both types are shown overlappedly.

Burushaski has Base-10+20 complex numeral system in all dialects. From 1 to 20, it shows decimal pattern (*turmahik* ‘11’ = *tóorimi* ‘10’ + *hik* ‘1’), but from 21 to 99 employs vigesimal (*wálti áltar turmahik* ‘91’ = ‘4×20+11’), and then over 100 it turns back into decimal (*tha ke hik* ‘101’ = ‘100 and 1’).

All the IA and Nuristani languages employ decimal system, while those in northernmost area of SA and some Romanic lects in Middle East to Europe show also vi- or quinquagesimal pattern. Though the Proto-IA language had the decimal numeral system. The complex numeral system in northern area may be affected by Burushaski as a sub- or adstratum language. Among these Base-10+20 IA languages, some have a simple word for ‘100’ (Shina *šal* ‘100’) but other lects express it as ‘5×20’ (Domaaki *poy biš* ‘5×20’), while most Nuristani ones use (or used just recently) a cognate word, Eastern Kati *azor* ~ Prasun, Waigali *azār*, to mean ‘400 (20<sup>2</sup>)’, being a loanword from Persian *hazār* ‘1000’, however. Western Kati uses *váčónáčə* ‘400 (= 20×20)’.

Jerusalem Domari sometimes say *šas* ‘6’ as *tārān-wā-tārān* ‘3+3’, *hōt* ‘7’ as *štār-wā-tārān* ‘4+3’, and always ‘8’ as *štār-wā-štār* ‘4+4’, and ‘9’ as *štār-wā-štār-wā-yikák* ‘4+4+1’ or *štār-wā-púnj* ‘4+5’. And the language can count up to 89 by both decimal and vigesimal ways, but from 90 to 99 is expressed by backcounting as in *sáy-ilā-dās* ‘90’ composed by ‘100 but 10 (= 100–10)’.

Zargari Romani shows a strange way to count from 51 to 99 as quinquagesimal pattern, namely 50 plus 1 to 49 such as *peyindā-deš* ‘60’ = *peyindā* ‘50’ + *deš* ‘10’, as well as the Khalaj language (Turkic) does so.

The Andamanese family is originally anumeric. Even in present, Bea and Jeru have no numerals, and use some quantifiers: Bea *ubatul* ‘single’, *onkalak* ‘few’, *ikpər* ‘some’, and *arduru* ‘many, all’. While Mixed Great Andamanese, an in-family mixed language for broader communication in the archipelago, has developed two numerals *entoplo* ‘1’ (surely cognate to *ubatul*) and *ertaphul* ‘2’ (cognate with *ikpər*). Abbi (2013) reports that one consultant gave her *inčinkə* ‘3’. Portman (1887) lists ‘one’ and ‘two’ of some languages but the words for ‘two’ look indeed cognate to *ikpər* ‘some’ aforementioned.

Vedda in Sri Lanka has five numerals borrowed from Sinhala and combines them to count until 10: *pahamay tava pahamay* ‘10 (= 5 and 5)’. More than 10 is expressed *siiyapojja* ‘large number’ (< Si. *siyaya* ‘100’).

NUMERAL SYSTEMS IN SOUTH ASIA

Kusunda in Nepal has inherent numerals *qasadan* ‘1’ to *paagu* ‘5’, and numbers over *çagoda* ‘6’ are expressed with Nepali loanwords. Nihali in India retains *biḍum* ~ *biḍi* ‘1’ as its own word, and uses *irar* ~ *ir*

‘2’, *mōṭho* ‘3’, and *nālo* ‘4’ from Dravidian and over *pāčo* ‘5’ from IA besides.

(YOSHIOKA Noboru)

- |                       |   |                              |   |
|-----------------------|---|------------------------------|---|
| Binary (Base2) type   | ∕ | Vigesimal (Base20) type      | ○ |
| Quinary (Base5) type  |   | Quinquagesimal (Base50) type | ● |
| Decimal (Base10) type | — | Anumeric language            | ∞ |

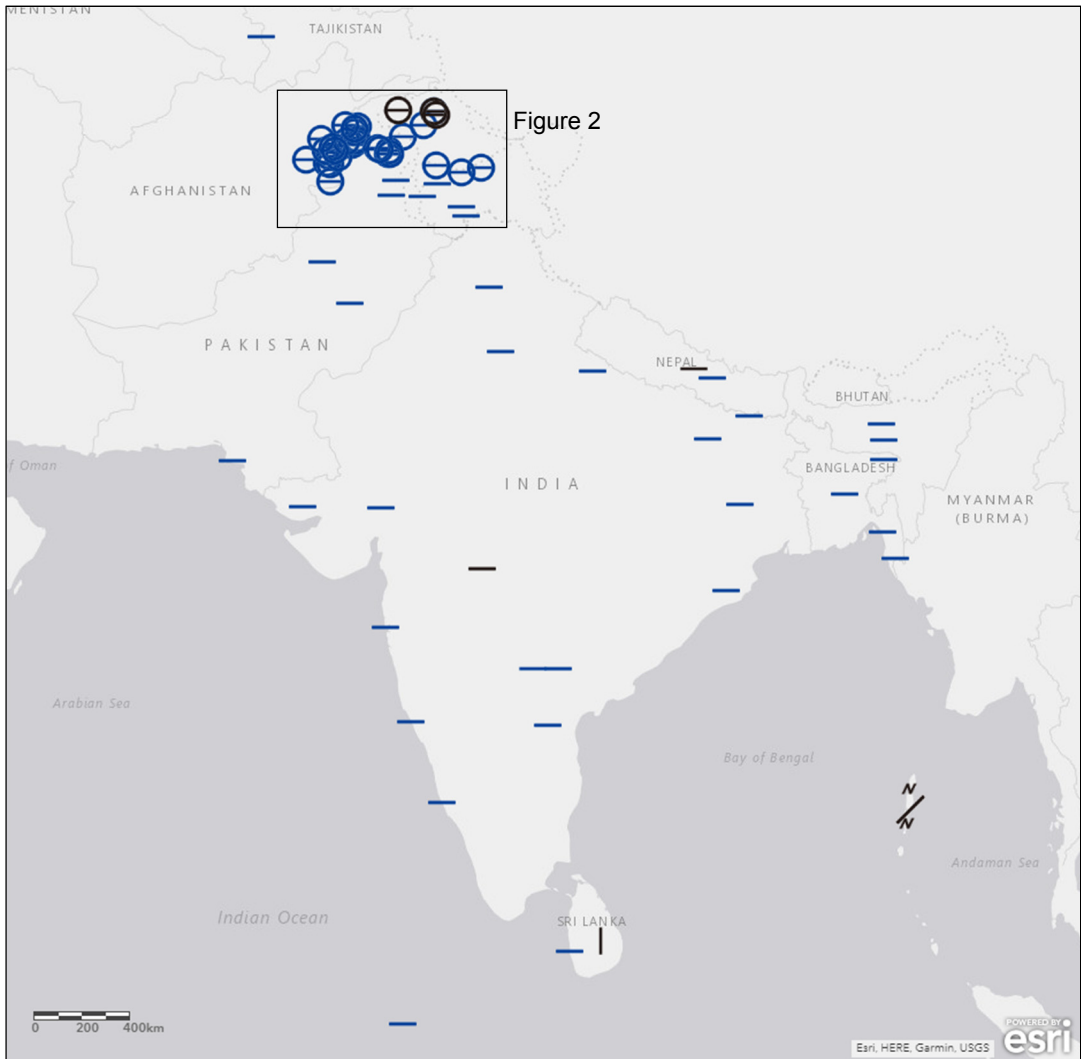


Figure 16.14.1: Numeral systems in SA: Indo-Aryan, Nuristani (both in navy blue), Andamanese, and language isolates (those in black).

## NUMERAL SYSTEMS IN SOUTH ASIA

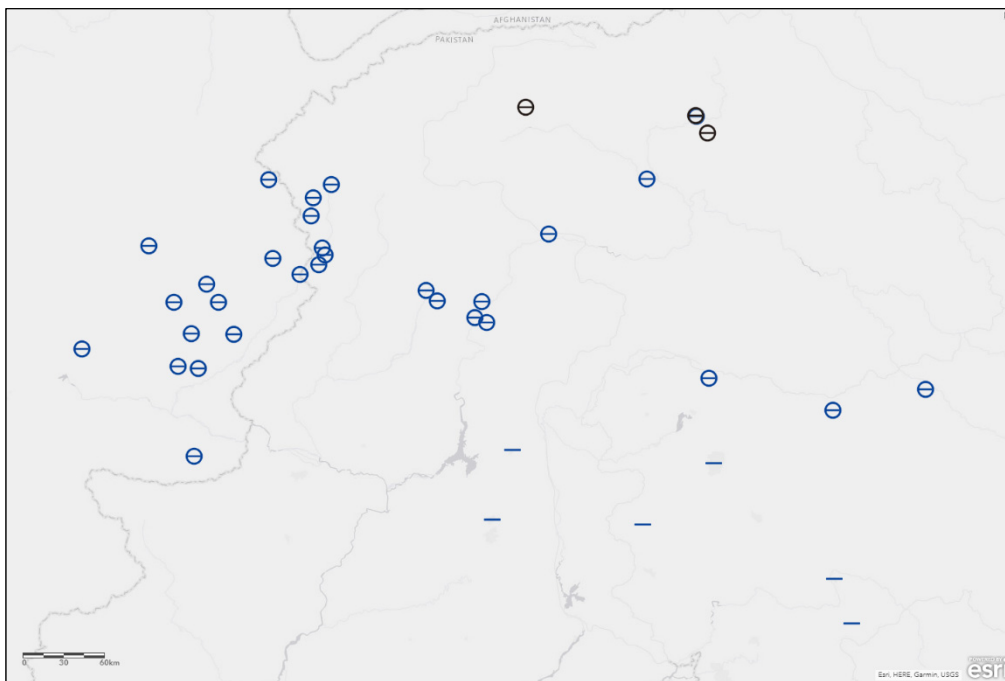


Figure 16.14.2: Numeral systems in northern Pakistan and northeastern Afghanistan (Part of Figure 1): Indo-Aryan, Nuristani (both in navy blue), and Burushaski (in black).

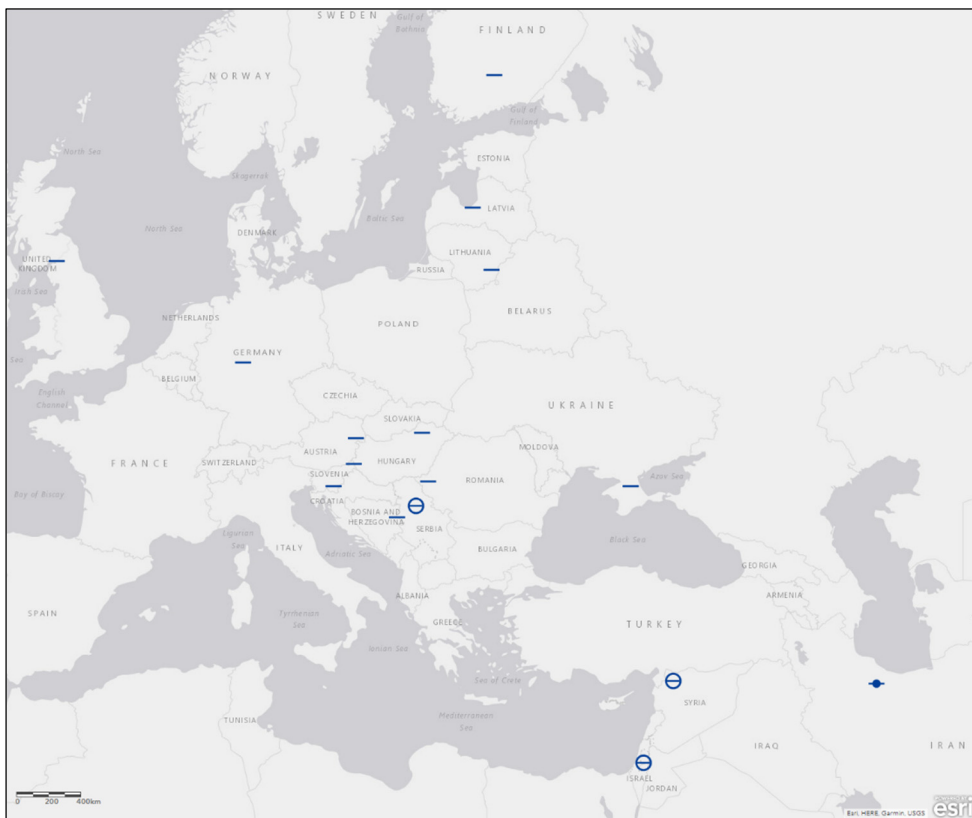


Figure 16.14.3: Numeral systems in Indo-Aryan languages outside South Asia.

## Numeral systems in Dravidian

### 1. Classification

All Dravidian languages employ the decimal system of numerals, at least up to 19 and probably above 400. Of the base number numerals, 10 and 100 are distinguished from nominal base numerals in that they cannot be pluralized nor modified by unit numerals.

Ex. Telugu Base numbers

Non-nominal: *padi* '10', *nūru* '100'

*ira-vay* '20', *in-nūru* '200'

*paṅ-ṅeṇḍu* '12', *nūṭa iravay* '120'

Nominal: *vanda* '100', *veyyi* '1000'....

*reṇḍu vanda-lu* '200' *reṇḍu vē-lu* '2000'

The vigesimal system from twenty onwards are commonly found in languages which appears to have borrowed *\*kōḍi* '20, score' from Indo-Aryan, or probably from Munda languages. (Cf. CDIAL)

Malto *ko:ṛi*

Kui *kuṛe(sg.)/koṛi(pl.)*

Kuvi *koṛe*

Pengo *koṛi*

Manda *kuṛe(sg.)/kuṛi(pl.)*

Cf. Kurukh *kuri*: Oriya(IA) *koṛi*

Kurukh is classified as decimal based on the data from Kobayashi and Tirkey (2017), although they mention that Grignard (1924) gives a vigesimal system up to 120 with *kuri*:. Grierson's Linguistic

Survey of India lists only decimal forms of Kurukh numerals.

### 2. Geographical distribution and interpretation

A decimal system of numerals is assumed in Proto-Dravidian, although the cognates are retained only in South and South Central Dravidian. Minority languages which have mostly replaced numerals with borrowings from Iranian or Indo-Aryan or Dravidian languages remain decimal.

Geographical distribution of vigesimal systems in Dravidian overlaps with that in Munda languages, where numerals more than ten tend to be replaced by Indo-Aryan borrowings, which are morphologically decimal but appear almost centesimal due to extensive fusion up to '99'.

One possible explanation of vigesimal systems in North East India is a partial borrowing supplemented by compounding in order to reduce the cost of memorizing all the Indo-Aryan two-digit decimal items. A decimal compounding would require nine numerals for 'tens' while borrowing '11' to '19' would enable vigesimal compounding using the base etymon *\*kōḍi* '20, score' which is widely attested in the area irrespective of the language families.

(KODAMA Nozomi)

NUMERAL SYSTEMS IN DRAVIDIAN

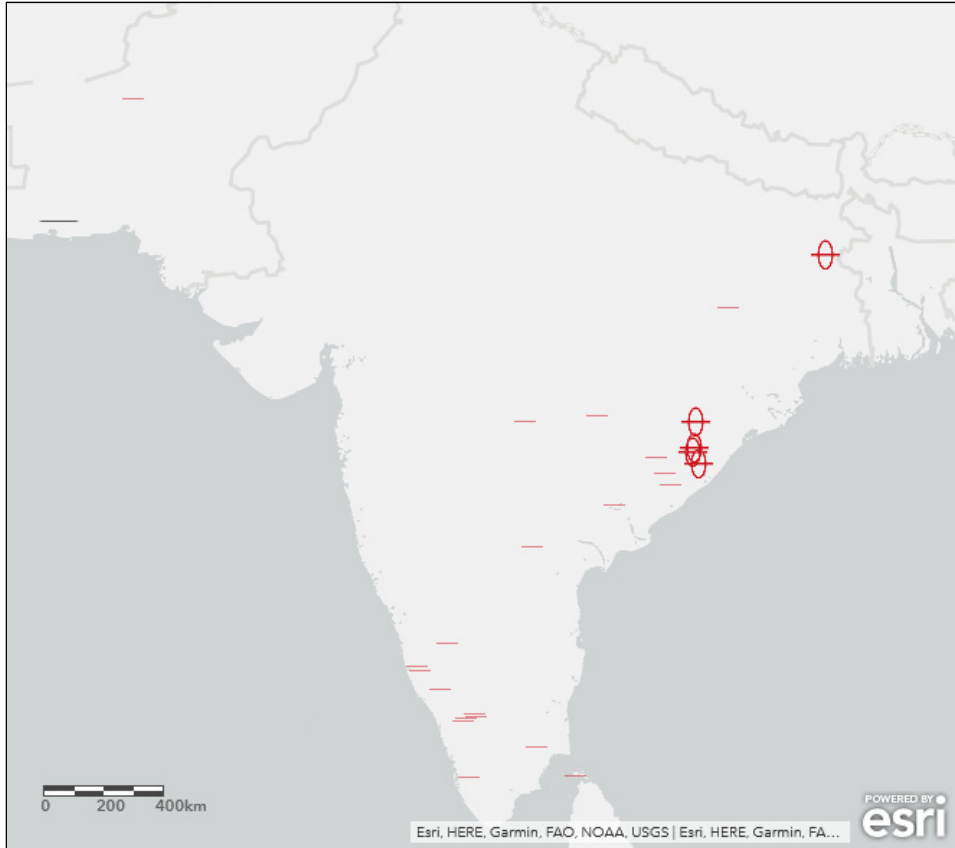


Figure 16.15.1: Numeral systems in Dravidian.

## Numeral systems in Iranian

### 1. Classification

Most of the contemporary Iranian languages have decimal systems, which are also the same system as Old Iranian. In addition, some languages employ partly vigesimal systems. Some languages are reverting from vigesimal systems to decimal systems due to borrowing.

### 2. Geographical distribution

Languages with vigesimal systems are concentrated in the eastern area, particularly border with the Indian subcontinent, and the Caucasus, in which non-Iranian languages with vigesimal systems are spoken. Considering that Old Iranian would have had a decimal system, it is likely that the vigesimal systems developed under the influence of other non-Iranian languages.

Ossetic languages (Iron and Digoron) spoken in the Caucasus region are unique in that they employ consistent decimal and vigesimal systems for 20-100 (see Table 1). The base of the vigesimal system (*ccædз*) is the inherited word ‘twenty’ in Old Iranian, while the word for twenty (*дыууын*) in the decimal system newly developed. Vigesimal systems are also common to the neighboring Caucasian languages such as Kartvelian and Nakh languages.

Pashto dialects and Parachi also have partly vigesimal systems. In addition, the former also use back counting (*يو کم پنځوس*) *yo kəm paṅḁo* ‘49’ one less than fifty) and

half-counting (*شپږ نېمې شلې*) *špəg nemi šəli* ‘130’= 6 and a half score).

Table 1. numeral systems in Ossetic (Iron, 20-100)

decimal		vigesimal
20	<i>дыууын</i>	<i>ccædз</i>
30	<i>æртин</i>	<i>дæс æмæ ccædз</i> (10 and 20)
40	<i>цыттор</i>	<i>дыууиссæдз</i> (2·20)
50	<i>фæндзæй</i>	<i>дæс æмæ дыууиссæдз</i> (10 and 2·20)
60	<i>æхсай</i>	<i>æртиссæдз</i> (3·20)
70	<i>æвдай</i>	<i>дæс æмæ æртиссæдз</i> (10 and 3·20)
80	<i>æстай</i>	<i>цыттарыссæдз</i> (4·20)
90	<i>науæдз</i>	<i>дæс æмæ цыттарыссæдз</i> (10 and 4·20)
100	<i>сæдæ</i>	<i>фондзыссæдз</i> (5·20)

Some languages are losing vigesimal systems due to the borrowing from Persian/Tajik decimal systems. According to Édel’man (1966: 33), for instance, Yazghulami exhibits a decimal system in general, while we can also observe a vigesimal system in the speech of elder speakers.

(IWASAKI Takamasa)

## NUMERAL SYSTEMS IN IRANIAN

— decimal system

○ vigesimal system

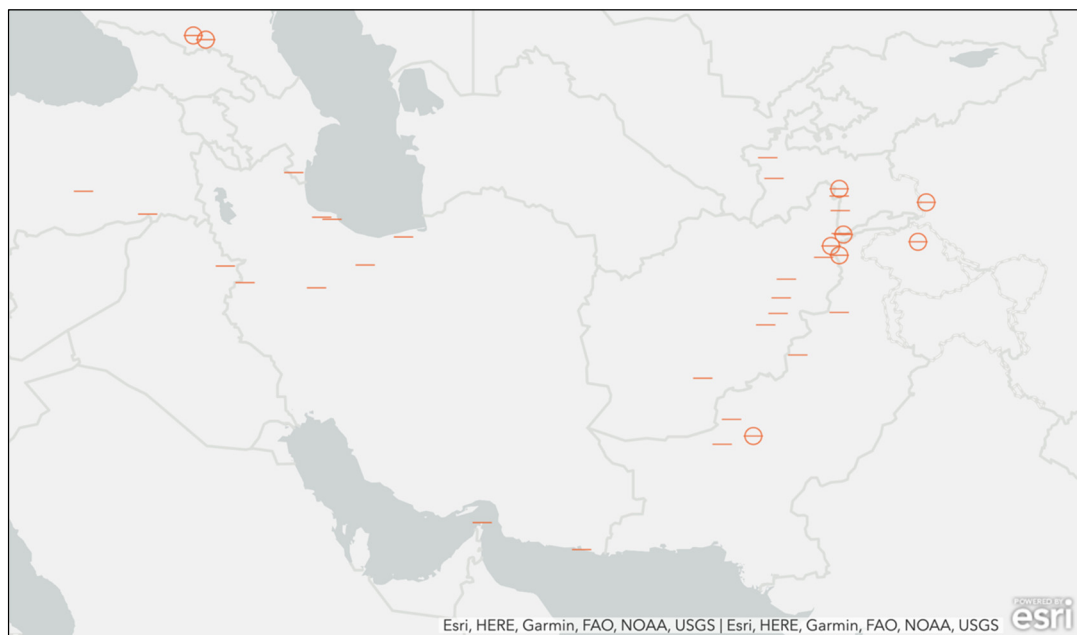


Figure 16.16.1: Numeral systems in Iranian.

## Numeral systems in Caucasian languages

The cardinal numbers from 1 to 99 in Caucasian languages (Kartvelian, Abkhazo–Adyghean, and Nakho–Daghestanian) exhibit two major patterns: (A) vigesimal and (B) decimal from 20 to 99. All of the languages possess the decimal system from 1 to 19. The cases of four languages, Kartuli, Abkhaz, Chechen (Nakh), and Sanzhi Dargwa (Daghestanian), are in Table 1. Of these, Kartuli, Abkhaz, and Chechen exhibit a decimal system from 1 to 19 and a vigesimal system from 20 to 99; this is Type A. Sanzhi Dargwa shows the decimal system for the entire numeral system; this is Type B.

Due data restrictions numerals over 20 are unavailable in several languages. These

languages are classified as Type C. See Figure 16.17.1.

As a marginal type of the numeral system, half-counting is attested in Ubykh: ‘50’ (= ‘100’ + ‘half’). A two-way morphology of the tens is found in Tsez, e.g., ‘11’ < ‘10 + 1’ and ‘1 + 10’.

Type A appears in the Kartvelian and Abkhazo–Adyghean languages and several Nakho–Daghestanian languages. Type B appears in Daghestanian languages, and Avar possesses both the types.

It is challenging to interpret this distribution of word forms.

(SUZUKI Hiroyuki)

Table 1: Cardinal numerals of Kartuli, Abkhaz, Chechen, and Sanzhi Dargwa in the phonological description.

	Kartuli	Abkhaz (numeric root)	Chechen	Sanzhi Dargwa
‘1’	<i>erti</i>	<i>ak<sup>1</sup>-</i>	<i>tshaʔ</i>	<i>ca</i>
‘2’	<i>ori</i>	<i>ɥ-</i>	<i>ʃiʔ</i>	<i>k<sup>w</sup>el (k<sup>w</sup>i-)</i>
‘3’	<i>sami</i>	<i>χ-</i>	<i>qoʔ</i>	<i>ʔa<sup>b</sup>-al</i>
‘4’	<i>otxi</i>	<i>pʃ-</i>	<i>diʔ</i>	<i>aʁ<sup>w</sup>-al</i>
‘5’	<i>xuti</i>	<i>χ<sup>w</sup>-</i>	<i>pχi</i>	<i>xu-jal</i>
‘10’	<i>ati</i>	<i>ʒ<sup>w</sup>a-</i>	<i>itt</i>	<i>wec<sup>1</sup>-al</i>
‘11’	<i>tertmet<sup>1</sup>i</i> (< <i>at-ert-met<sup>1</sup>i</i> ‘10-1-more’)	<i>ʒ<sup>w</sup>éjza-</i>	<i>tsha-jtt-a</i>	<i>wec<sup>1</sup>-nu ca-ra</i>
‘20’	<i>otsi</i>	<i>ɥaʒ<sup>w</sup>á-</i> (2*10)	<i>tq<sup>1</sup>a</i>	<i>ka-jal</i>
‘30’	<i>otsdaati</i> (< <i>ots-da-ati</i> ‘20-and-10’)	<i>ɥaʒ<sup>w</sup>(é)íʒ<sup>w</sup>a-</i> (20+10)	<i>tq<sup>1</sup>e-itt</i> (20+10)	<i>ʔa<sup>b</sup>-c<sup>1</sup>al</i>
‘40’	<i>ormotsi</i> (< <i>or-m-otsi</i> ‘2-time-20’)	<i>ɥənuɥaʒ<sup>w</sup>a-</i> (2*20)	<i>ʃovz-t<sup>1</sup>q<sup>1</sup>a</i> (2*20)	<i>aʁ<sup>w</sup>-c<sup>1</sup>al</i>
Source	Fähnrich (1993:63), description modified	Yanagisawa (2013:85-86), transliterated in IPA	Klimov (1994:158), description modified	Forker (2020:130)



## NUMERAL SYSTEMS IN CAUCASIAN LANGUAGES

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>⊖ A: vigesimal from 20 to 99.</li> <li>— B: decimal from 20 to 99.</li> <li>☒ C: numeral data (20 to 99) unavailable.</li> </ul> | <ul style="list-style-type: none"> <li>— decimal</li> <li>○ vigesimal</li> </ul> |
|---|--|

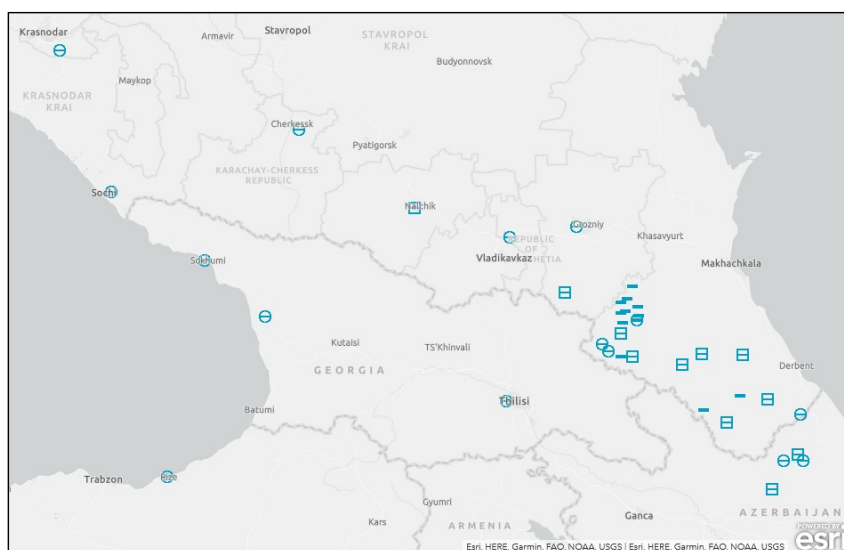


Figure 16.17.1: Numeral systems in Caucasian languages.

## Numeral systems in Semitic

All the Semitic languages have Decimal numeral system. Here I classify them into two groups: NW (North West) group and SW (South West) group. The East group, includes Akkadian, has no contemporary successor.

To NW group belong Arabic, Aramaic and Hebrew. The peripheral dialects of Arabic retain the Arabic numeral system.

To SW group belong Modern South Arabian (Mehri, Hobyot, Soqotri in Yemen and Oman) and Ethiopic (Amharic, Tigre, Tigrinya).

### (1) 1 to 10

The numeral systems of all the Semitic languages are decimal. The forms of the unit numbers (1 to 10) are in table 1.

### (2) 11 to 19

11 to 19 consist of U (the unit numbers) and B (the base number '10'). The forms often are fused together. In the NW group the word order is U + B.

- Aramaic (NW) of Bohtan Turkey  
*tri:ssar* '12' < *tra* '2' + *ašra* '10'

- Arabic (NW) of Cairo  
*itna:far* '12' < *itne:n* '2' + *šafara* '10'

In the SW group vice versa, B + U.

- Amharic (SW)  
*asra hulätt* '12' < *assər* '10', *hullätt* '2'

- Mehri (SW) in Yemen  
*o:lər wə-xajməh* '15'  
< *a:ləri:t* '10', *wə* 'and' *xəmmo:h* '5'

U and B order may have something to do with the VO and OV order of the sentence. Since the order of Bukhara Arabic in Uzbekistan, which belongs to NW but have

OV order as Ethiopic, is B + U.

- Arabic of Bukhara in Uzbekistan (NW)  
*šáfr-u isnēn* '12'  
< *šafer* '10', *-u* 'and', *isnēn* '2'

### (3) 21 to 99

The order of 21 to 99 is also U + B in NW and B + U in SW.

- Telkepe Aramaic in Mosul Iraq (NW)  
*'arbá-w=əsri* '24'  
< *'arbâ* '4' + *w* 'and' + *'əsriâ*

- Tigre (SW)

*šasra wa-ħatte* '21' < '20' + 'and' + '1'

### (4) 20

20 is made by adding the plural ending to '10' with some phonological changes.

- Arabic of Cairene (NW)  
*šifri:n* < *šafara* '10' + *-in* (plural ending)

- Tigrinya (SW) *'äsra* < *'äserte* '10' + *-a*

- Soqotri (SW) *šáleri* < *šilére* '10' + *-i*

But Amharic (SW) has the own form of '20'.

- Amharic (SW) *haja* '20', cf. *assər* '10'

### (5) 30 - 90

The multiples of ten, 30 - 90 are formed by adding the plural ending to B.

- Arabic of Cairo (NW)  
*talati:n* '30' < *tala:ta* '3' + *-i:n*

- Tigre (SW)

*salāsa* '30' < *salas* '3' + *-a*

The ending *-a* of Ethiopic, sharing with Ge'ez (Cl. Ethiopian) also may be of Proto Semitic. (cf. Akkadian)

	'30'	'40'
Amharic	<i>sālasa</i>	<i>arba</i>
Ge'ez	<i>šālasa</i>	<i>ärəbša</i>
Akkadian	<i>šalāšā</i>	<i>erba</i>

(NAGATO Youichi)

NUMERAL SYSTEMS IN SEMITIC

Table 1. 1-5. Modern Hebrew, Aramaic of Bohtan, Arabic of Cairo Egypt, Arabic Creole of Kibera Kenya, Mehri of Oman and Yemen, Tigre of Ginda<sup>6</sup>, Tigrinya of Rayya.

Group	Language	1	2	3	4	5
North West	Hebrew	<i>eḫad</i>	<i>šnajm</i>	<i>šloša</i>	<i>arba'a</i>	<i>ḫamiša</i>
	Aramaic	<i>xa</i>	<i>tra</i>	<i>ṭlota</i>	<i>arba</i>	<i>xamša</i>
	Arabic	<i>wa:ḥid</i>	<i>itne:n</i>	<i>tala:ta</i>	<i>arbaša</i>	<i>ḫamsa</i>
	Arabic Creole	<i>wái</i>	<i>tinín</i>	<i>taláta</i>	<i>árba</i>	<i>kámsa</i>
South West	Mehri	<i>t'a:t'</i>	<i>θro:h</i>	<i>la:θajt</i>	<i>ərbo:t</i>	<i>xəmmo:h</i>
	Amharic	<i>and</i>	<i>hulätt</i>	<i>sost</i>	<i>aratt</i>	<i>amməst</i>
	Tigre	<i>'oro, ḫatte</i>	<i>kəl'ot</i>	<i>salas</i>	<i>'arba'</i>	<i>ḫaməs</i>
	Tigrinya	<i>hade</i>	<i>kelete</i>	<i>seleste</i>	<i>arbaete</i>	<i>hamufte</i>
East	Akkadian	<i>iftēn</i>	<i>šina</i>	<i>šalāf</i>	<i>erba</i>	<i>ḫamiš</i>

Table 2. 6-10

	Language	6	7	8	9	10
North West	Hebrew	<i>šifa</i>	<i>šiv'a</i>	<i>šmona</i>	<i>tif'a</i>	<i>asara</i>
	Aramaic	<i>əfta</i>	<i>šawa</i>	<i>tmanja</i>	<i>əčča</i>	<i>əsra</i>
	Arabic	<i>sitta</i>	<i>sabša</i>	<i>tamanja</i>	<i>tisša</i>	<i>šašara</i>
	Arabic Creole	<i>síta</i>	<i>sába</i>	<i>tamánia</i>	<i>tísa</i>	<i>áfara</i>
South West	Mehri	<i>jəti:t</i>	<i>jəbajt</i>	<i>θəməni:t</i>	<i>səšajt</i>	<i>a:ləri:t</i>
	Amharic	<i>səddəst</i>	<i>səbatt</i>	<i>səmmənt</i>	<i>zät'əjɲ</i>	<i>assər</i>
	Tigre	<i>səs</i>	<i>sabə'</i>	<i>samān</i>	<i>sə'</i>	<i>'asər</i>
	Tigrinya	<i>fudušte</i>	<i>sewa'ate</i>	<i>femonte</i>	<i>tefe'ate</i>	<i>'əserte</i>
East	Akkadian	<i>fediš</i>	<i>sebe</i>	<i>samāne</i>	<i>tife</i>	<i>efer</i>

Table 3. 11-15

Group	Language	11	12	13	14	15
North West	Hebrew	<i>əḫad asar</i>	<i>šnem asr</i>	<i>šloša asar</i>	<i>arba'aasar</i>	<i>ḫamiša asar</i>
	Aramaic	<i>gdissar</i>	<i>trissar</i>	<i>iltəssar</i>	<i>arbassar</i>	<i>xamšassar</i>
	Arabic	<i>ḥida:šar</i>	<i>itna:šar</i>	<i>talatta:šar</i>	<i>arbata:šar</i>	<i>ḫamasta:šar</i>
	Arabic Creole	<i>idá-áfara</i>	<i>idná-áfara</i>	<i>talátá-áfara</i>	<i>arbatá-áfara</i>	<i>kamstá-áfara</i>
South West	Amharic	<i>and</i>	<i>hulätt</i>	<i>sost</i>	<i>aratt</i>	<i>amməst</i>
	Tigre	<i>šasər waḫatte</i>	<i>šasər kəl'ot</i>	<i>šasər salas</i>	<i>šasər 'arba'</i>	<i>šasər ḫaməs</i>
	Tigrinya	<i>šasərtə hədə</i>	<i>šasərtə kiltə</i>	<i>šasərtə sələstə</i>	<i>šasərtə arbaštə</i>	<i>šasərtə hammuftə</i>
East	Akkadian	<i>iftēn</i>	<i>šina</i>	<i>šalāf</i>	<i>erba</i>	<i>ḫamiš</i>

Table 4. 20 - 60

	Language	20	30	40	50	60
North West	Hebrew	<i>esrīm</i>	<i>šlošīm</i>	<i>arb'īm</i>	<i>ḫamišīm</i>	<i>šifīm</i>
	Aramaic	<i>əsri</i>	<i>ṭloti</i>	<i>arbi</i>	<i>xamši</i>	<i>əfti</i>
	Arabic	<i>šifri:n</i>	<i>talati:n</i>	<i>arbiši:n</i>	<i>ḫamsi:n</i>	<i>sitti:n</i>
	Arabic Creole	<i>ifirín</i>	<i>teletín</i>	<i>arbeín</i>	<i>kamsín</i>	<i>sitín</i>
South West	Amharic	<i>səddəst</i>	<i>səbatt</i>	<i>səmmənt</i>	<i>zät'əjɲ</i>	<i>assər</i>
	Tigre	<i>šəsra</i>	<i>salāsa</i>	<i>arbəša</i>	<i>ḫəmsa</i>	<i>səssa</i>
	Tigrinya	<i>šisra</i>	<i>səlasa</i>	<i>arbaša</i>	<i>ḫamsa</i>	<i>šilsa</i>
East	Akkadian	<i>fediš</i>	<i>sebe</i>	<i>samāne</i>	<i>tife</i>	<i>efer</i>

NUMERAL SYSTEMS IN SEMITIC

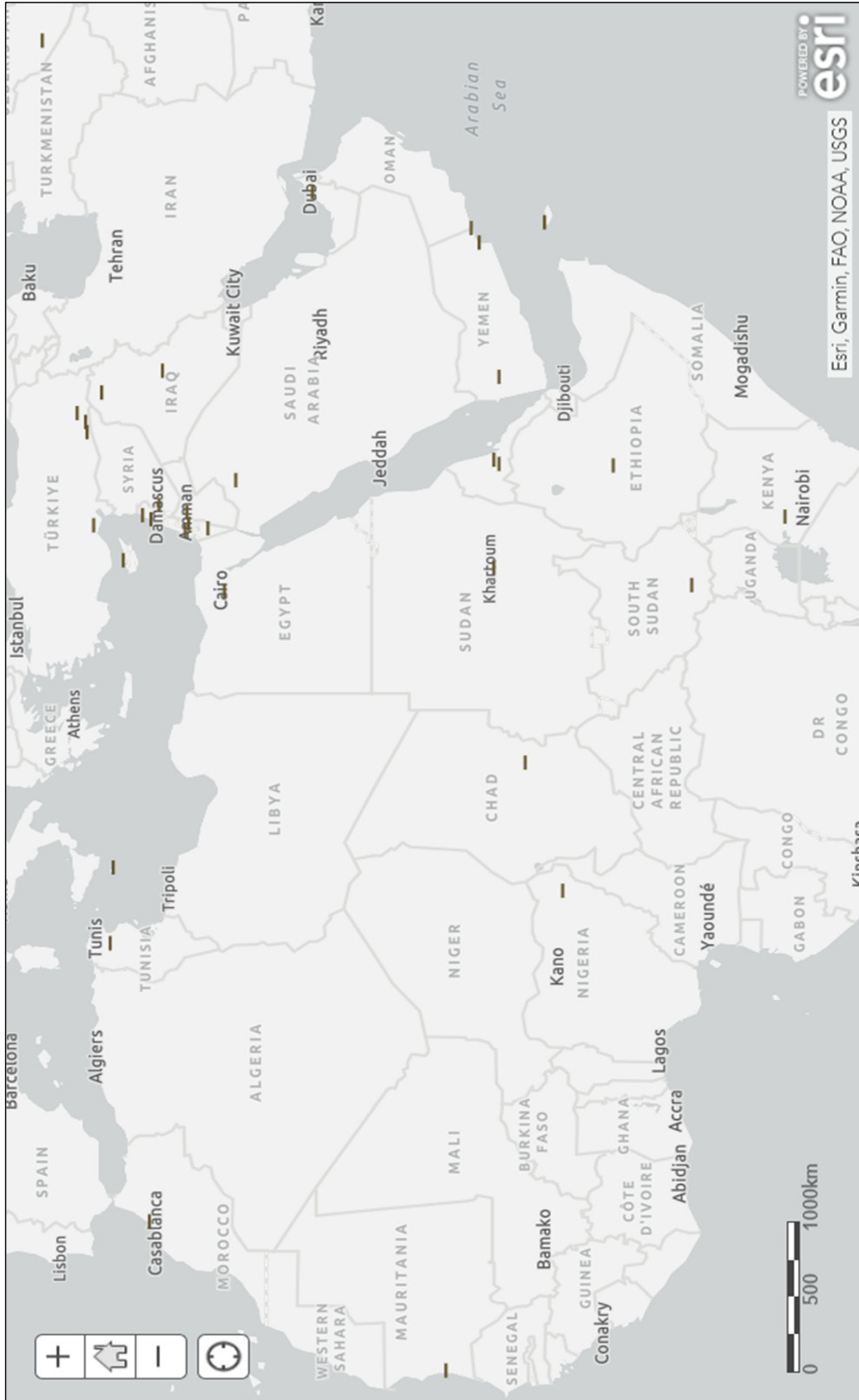


Figure 16.18.1: Numeral systems in Semitic —: Decimal type

## Numeral systems in Nilo-Saharan

### 1. Classification

Numeral systems in Nilo-Saharan (and some adjacent languages) represented in this study are classified into major four types plus two rare types (Shabo and Ngiti):

5-10-10 type: Quinary system under 10 and decimal system above 10

5-10-20 type: Quinary system under 10, decimal system from 10 to 20 and vigesimal system above 20

10-10-10 type: decimal system

10-10-20 type: decimal system under 20 and vigesimal system above 20

Shabo type: binary, quinary, decimal and vigesimal systems

Ngiti: quaternary system

### 2. Geographical distribution and interpretation

The 5-10-10 type is common among Eastern African Nilo-Saharan languages (South Sudan, Uganda and western Kenya), which genetically include Nilotic, Surmic and Kuliak. An isolated Nilo-Saharan language Kunama (spoken in Eritrea) and a Central Sudanic language Yulu (spoken in South Sudan and Central Africa) also attest to this system. Many of these languages (especially Western Nilotic) show fused forms (e.g., Kenyan Luo *auciel* ‘6’ from *abic* ‘5’ and *aciel* ‘1’), allowing them to be characterized as having an etymological quinary system. Also, among these languages, Bari (Eastern Nilotic) has borrowed numeral terms 6 to 9 from Western Nilotic (probably the Dinka-Nuer sub-group), Kumam (Western Nilotic) from Teso (Eastern Nilotic) and Nyang’i

(Kuliak) from Karamojong (Eastern Nilotic). As such, they could otherwise be categorized as languages with a decimal system from a synchronic viewpoint.

The 5-10-20 type is common in the areas surrounding the White Nile (western South Sudan, the Nuba Mountains area in Sudan and Sudan-Ethiopia border areas). They are genetically diverse (Kadu, Koman, Central Sudanic, Eastern Jebel, Berta, Surmic and Western Nilotic). For these languages, etymologies such as 5 ‘hand’, 10 ‘fingers, hands’ and 20 ‘man, person’ (or ‘house’ in northern Uganda) are widely attested. Opo (Koman) expresses 10 as ‘5×2 (two hands),’ and it seems to have a quinary system under 20. However, since 15 is expressed as ‘5×2+5,’ which means it uses 10 as a base for teens, we classify it as a 5-10-20 type language. Gwama (Koman) is shifting to the 5-10-10 type as a result of borrowing larger decimal numerals (30 and above) from Eastern Cushitic Oromo (Zealelem 2005).

The pure decimal (10-10-10) type is widely distributed in the northern parts of the Nilo-Saharan speaking area, where Arabic and/or Berber with a decimal system is/are the prestigious language(s). For example, the Mayu dialect of Berta shows Arabic loanwords for 3 and above (retaining native terms for only 1 and 2), Korandje (Songhay) for 4 and above and Northern Gumuz for 7 and above. Eastern and Southern Nilotic and Surmic languages also exhibit this type as a result of borrowing decimal numeral terms from neighboring Cushitic (Afroasiatic). Eastern and Southern Nilotic and Surmic tend to

show (Eastern) Cushitic borrowings from 6 to 10 (and the multiples of 10). The Cushitic term for 10 has also been borrowed into both Ik (Kuliak, probably via Eastern Nilotic) and Nubian languages (probably from Beja, Northern Cushitic). A few of these languages exhibit ‘back-counting’ numeral terms, such as Kara (Central Sudanic) 6 ‘10–4,’ 7 ‘10–3,’ 8 ‘10–2’ and 9 ‘10–1’, as do Mbay, Kabba, Ngambay and Ma’di (Central Sudanic), Luo (Western Nilotic) and Nara to a lesser degree. Kunama (5-10-10 type), spoken adjacent to Nara, also displays back-counting. Two archaic Berta dialects (Fadashi and Undulu) attest to a unique 5-10-20 system where 10 and 20 are both used as bases for multiples of ten (i.e., 30 ‘10×3,’ 40 ‘20×2,’ 50 ‘10×5,’ 60 ‘20×3,’ etc.), while most vigesimal languages use addition (i.e., 50 ‘20×2+10’).

The 10-10-20 type is found in a few languages of the Nuba Mountains in Sudan (Ama) and Sudan-Ethiopia border areas (Southern Gumuz, Chai, Mursi). The Chai and Mursi (southeastern Surmic) numerals for 2, 3 and for 6 to 9 have borrowed from Eastern Cushitic.

Shabo (isolate, probably not Nilo-Saharan, Kibebe 2015), spoken in Ethiopia, and Ngiti (Central Sudanic, Kutsch Lojenga 1994), spoken in DR Congo, have unique traditional numeral systems. The traditional Shabo system exhibits a combination of binary, quinary, decimal and vigesimal systems, where 3 is expressed as ‘2+1,’ 4 as ‘2+2,’ 5 as ‘fist,’ 6 as ‘5+1,’ etc. and, like Opo (5-10-20 type), 15 as ‘2×5+5’ (i.e., 10 is used as a base for teens). Kibebe (2015)

reports that the current Shabo system is a 5-10-20 system with extensive borrowing from Majang (Surmic). Ngiti (Kutsch Lojenga 1994) display a traditional quaternary system where 4, 8, 12, 16, 20, 24, 28 and 32 function as a base (e.g., 11 ‘12–1,’ 13 ‘12+1,’ 14 ‘12+2’). Larger numbers are expressed as multiples of 32 (e.g., 64 ‘32×2’). Kutsch Lojenga (1994) reports that this unique system has been largely replaced by the Swahili decimal system.

Apart from the usual numeral system, some languages attest to numerals for special registers. Pāri (Western Nilotic, spoken adjacent to Bari) has a series of numerals used in children’s games (Simeoni 1978) that etymologically resembles Bari numerals (which are also borrowings from Western Nilotic, as mentioned above). Korandje (Songhay) has a series of ‘cryptic numerals’ based on a quinary system (with back-counting, such as 4 ‘5–1’ and 9 ‘5×2–1’) and another series of numerals below 10 (Berber loanwords) for children’s games (Souag 2010).

Although we have omitted it from the map due to lack of data above 10, Mubarak (2006) reports that Logorik (Daju), spoken in Nuba Mountains, expresses 6 as ‘3+3,’ 7 as ‘3+4,’ 8 as ‘4+4’ and 9 as ‘5+4,’ which does not fit any of the systems in our typology.

Many languages borrow numeral terms for 100 and 1,000 from a local lingua franca (Arabic, Amharic, Oromo or Swahili).

(NAKAO Shuichiro)

NUMERAL SYSTEMS IN NILO-SAHARAN

- Binary type      /
- Quinary type    |
- Decimal type    -
- Vigesimal type  ○
- Other types     ●

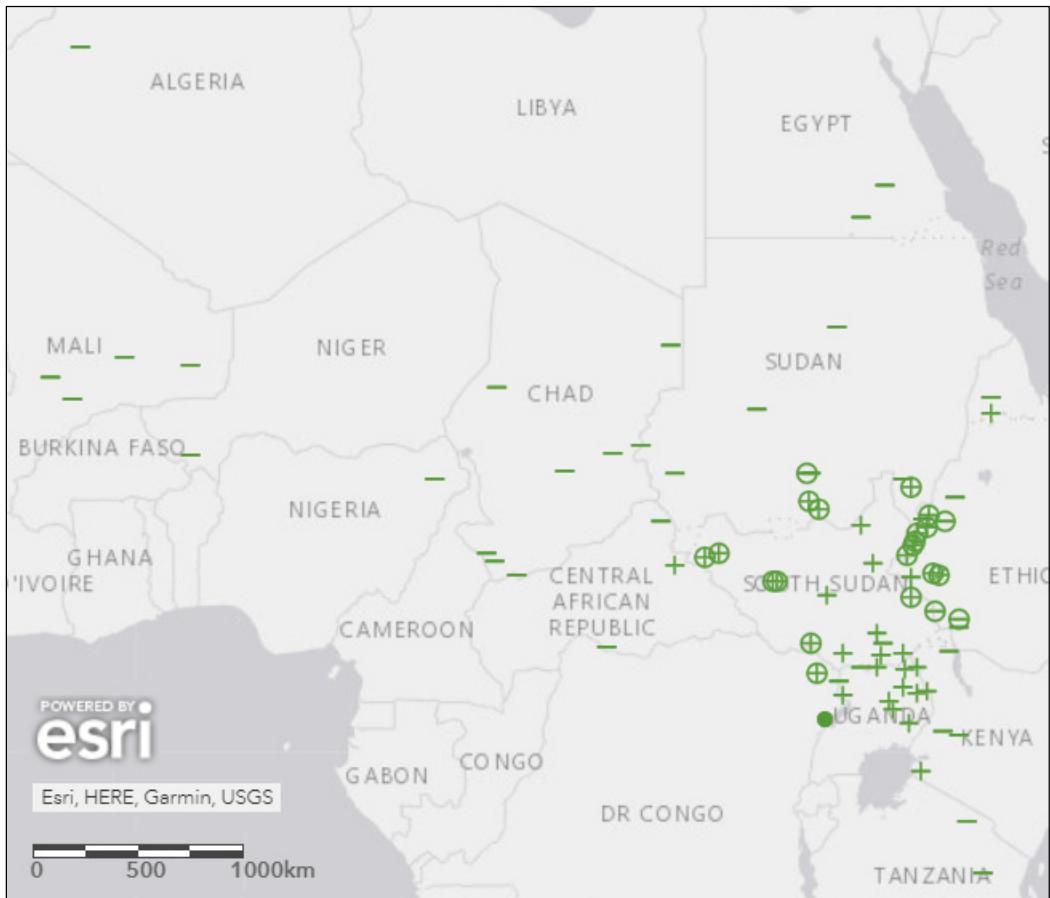


Figure 16.19.1: Numeral systems in Nilo-Saharan.

NUMERAL SYSTEMS IN NILO-SAHARAN

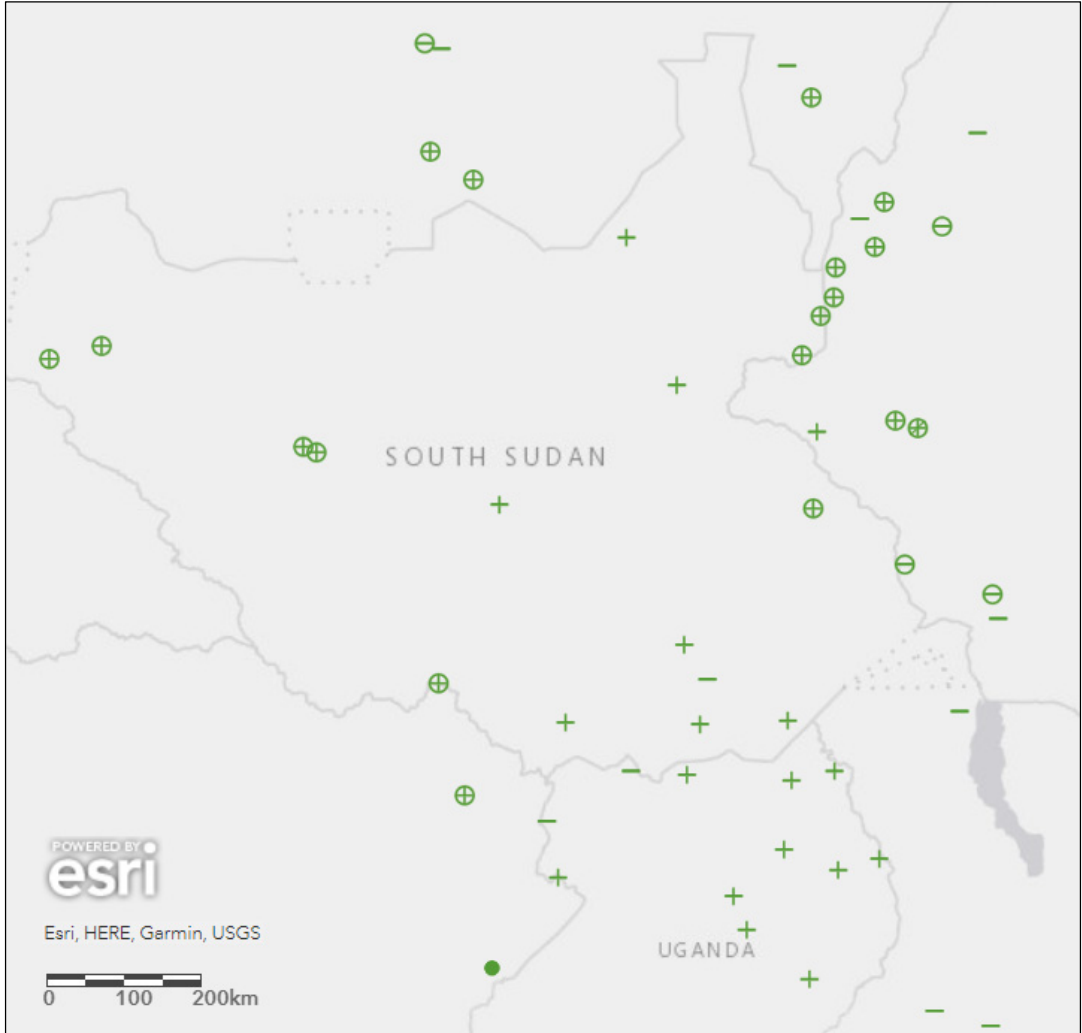


Figure 16.19.2: Nilo-Saharan in and around South Sudan.



## Numeral systems in the Kalahari Basin Area

In the 15 samples, 14 languages other than Khoekhoe originally had only three numerals (e.g., in Xade Glui, *lúí* denotes “one”; *lám*, “two”; and *η!ūnā*, “three”). There is no indigenous numeral denoting numbers over three (None type).

On the other hand, Khoekhoe of the Khoe-Kwadi language family is the only language in the samples that has a decimal numeral system. This decimal system has been integrated into Naro (of the same family) and W. !Xoon (Tuu family). Consequently, mixed systems consisting of the original three numerals and borrowed decimal systems are seen in these two languages. The etymologies of both the three-numeral and decimal systems are unknown.

Sets of idiomatic expressions depict hand signs for counting things. These idioms form a system that is distinct from the original three-numeral system. For example, in W. !Xoon, *!b'ém-n|é'é*, an idiomatic expression for “six,” literally denotes “grip one,” constituting a quinary-like system. On the other hand, idiomatic expressions in Glui and Glana constitute a decimal-like system. For example, in Glui, “36” is described in the following manner (Nakagawa, 2010):

*η!ūnā ʔòrò tshéū sèrà lòō-kàxó ā glàē-tshéū sà †āā*

“to finish both hands three times and put the thumb in”

Table 1: Numeral systems in KBA languages.

Family	Branch	Language	Type
Tuu	!Ui	N!ng	None
	Taa	W. !Xoon	None/ Decimal
		E. !Xoon	None
Kx'a	†'Amkoe	N!aqriaxe	None
	Ju	Ts. Jul'hoan	None
		W. !Xuun	None
		E. !Xuun	None
Khoe-Kwadi	Kalahari-Khoe	Ts'ixa	None
		Tshila	None
		Glana	None
		Glui (Xade)	None
		Glui (Khute)	None
		†Haba	None
		Naro	None/ Decimal
	Khoekhoe	Khoekhoe	Decimal

(KIMURA Kimihiko, NAKAGAWA Hiroshi)

## NUMERAL SYSTEMS IN THE KALAHARI BASIN AREA

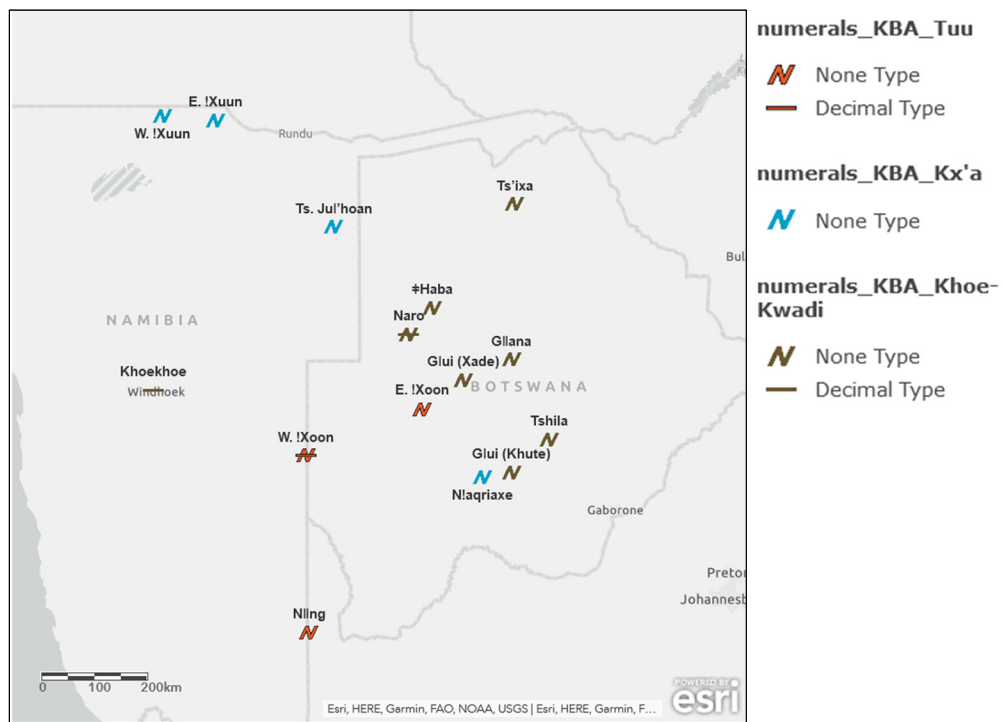


Figure 16.21.1: Geographical distribution of numeral systems in KBA.

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Primary sources for drawing maps are arranged in alphabetical order of authors for each language family. As for Sinitic, references and primary sources are separated, because abundant investigation reports were used. Additionally, romanisation and English translation are omitted for primary sources of Sinitic, since those who utilise these original documents should be aware of Chinese characters. Several items lack reference data in the part of Austroasiatic, since they were utilised through SEAlang databases.

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