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A Geolinguistic Approach to nDrapa Dialectology*

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Summary

This study investigates dialectal divisions in nDrapa and their historical development using geolinguistic methods. We examine data from the Swadesh 100 wordlist at 13 points in nDrapa dialects. The geographical distribution of word forms presents a dialect continuum across three dialect groups: southern, central, and northern. By contrast with previous studies, we find that dialect boundaries do not coincide with the administrative boundary between Yajiang and Daofu.

Based on geolinguistic analysis, dialect boundaries vary across items but can be classified into several patterns. There are two significant isoglosses within the Yajiang and Daofu counties, which divide three dialect groups. In some cases, there are no clear dialectal boundaries between Central and Northern or between Central and Southern regions. However, the Central dialect group is mainly characterized by a mixture of basic words that are common to either Northern or Southern dialects. In addition, some vocabulary has developed exclusively in the Central dialects.

Key words: nDrapa, dialect geography, dialect continuum, basic word, geolinguistics

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1. Introduction

nDrapa (or Zhaba; ISO 639-3: zhb) is a Sino-Tibetan language spoken in the border area between Yajiang and Daofu counties, Western Sichuan, China (Figure 1). Previous studies (Gong 2007: 11; also suggested by Huang 1990) have referred to two dialect groups: the Shang-Zhaba (上扎坝; literally, Upper nDrapa) dialect spoken in Daofu and the Xia-Zhaba (下扎坝; literally, Lower nDrapa) dialect spoken in Yajiang. However, no detailed dialectal surveys were conducted in these studies.

This study examines the basic vocabulary used in 13 nDrapa villages along the tributaries of the Yarlung River to clarify the dialectal divisions of nDrapa and their historical developments. We use geolinguistic (dialect geography) methods in our analysis. We collected data based on the Swadesh 100-item wordlist, drawing from both previous studies and the authors' fieldwork. The boundary assumed by the dichotomy in the previous study is shown by X in Figure 1, which is the administrative boundary between the Yajiang and Daofu counties. In our analysis, however, only one of the 100 items shows an isogloss at X.

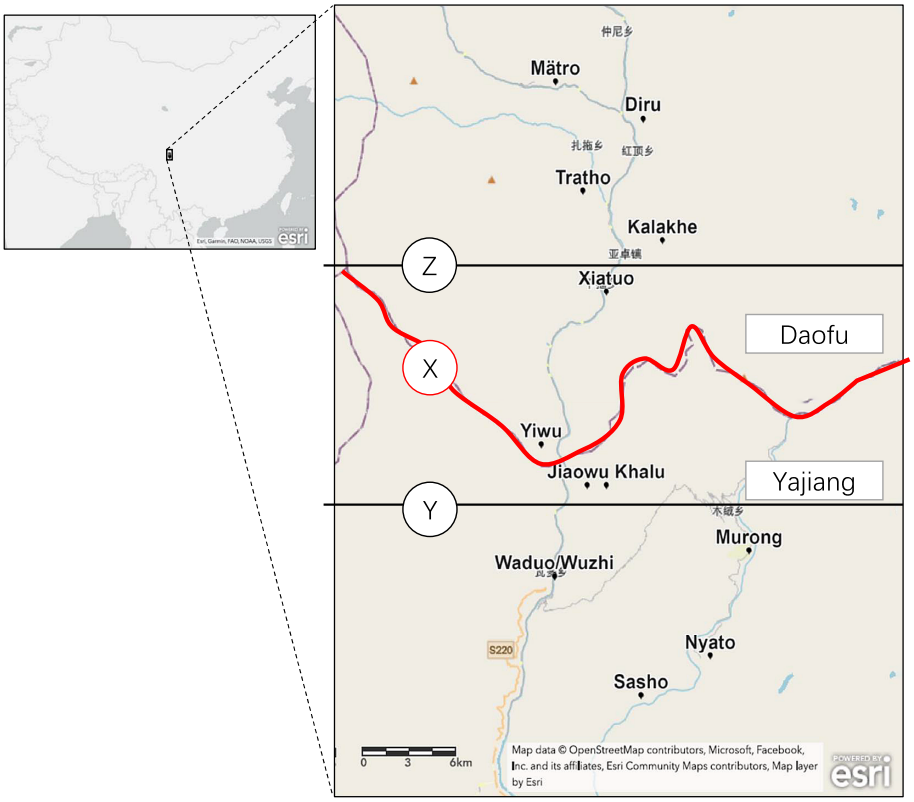

Figure 1 nDrapa villages

On the other hand, many of the boundaries overlap at Y and Z.

This paper will show linguistic maps of 11 representative vocabulary items: 'we', 'tooth', 'tree', 'fish', 'ear', 'meat, flesh', 'belly', 'eye', 'moon', 'sand', and 'leaf'. Geolinguistic analysis leads us to the conclusion that nDrapa exhibits a dialect continuum across three dialect groups: southern, central, and northern. Moreover, the borders of these dialects do not coincide with the administrative boundary between Yajiang and Daofu.

2. Previous Studies

There has been no previous study of nDrapa dialect geography, but there have been previous studies on the vocabulary of nDrapa dialects. For the southern group, Gong (2007: 177–254) records 3340 words of the Waduo dialect. Huang (forthcoming), in turn, finds about 3200 words of the Murong Sasho dialect. In terms of the northern group, Huang (ed.) (1992: 1–608) provides a detailed lexicon of about 1822 words based on the Tratho dialect. Shirai (2011: 69–87) lists 628 basic words for the Mätro dialect. Sun (2016: 231–554) includes 400 Qiangic cognates with some basic vocabulary in the Tratho dialect. No data of the central group have been provided.

3. Methodology

This study uses the geolinguistic method (cf. Sibata 1969). Here, we introduce the basic procedure. First, we identify the regional variants of each item of basic vocabulary, both through fieldwork and via previous studies. Table 1 lists the survey points and data sources. Next, we map the regional variants using ArcGIS Online (www.arcgis.com). Then, we investigate the geographical distribution from there. Word forms were classified to examine the distribution. The choice of map symbols reflects the classification. Finally, focusing on that distribution, together with other clues, we estimate diachronic change, and its factors.

The geolinguistic methodology includes the following basic assumptions: 1) Every word may have a history, but there should be trends in distribution from the maps, as a linguistic map is a projection of history (cf. Sibata 1969: 39–40). 2) Closer inspection reveals nonce occurrences of some words in an intermediate area that are rarely found in other dialect areas; this readily fits the notion of a dialect continuum (cf. Chambers & Trudgill 2004: 6–8).

4. Examples of Geographical Distribution

Here, we present the linguistic maps of 11 items from the Swadesh list of 100 basic words and discuss the geographical distribution of each item. The word forms from four representative dialects are listed in the Appendix at the end of the present paper.

Table 1 nDrapa dialect survey points

County	Dialect Name	Chinese	Wylie Tibetan (Li et al. 2014)	Data Source
Daofu 道孚 *rta'u*	Mätro	仲尼鄉麻中村	*mar 'gro*	Shirai's fieldnotes
	Diru	紅頂鄉地茹(入)村	*de bzang*	Suzuki (2006)
	Tratho	扎拖鄉扎拖村	*brag thog*	Huang ed. (1992)
	Kalakhe	亞卓鄉呷拉坎村	*dkar lag khams*	Shirai's fieldnotes
	Xiatuo	下拖鄉托比村	*bya thang*	Y. Huang's fieldnotes
	Yiwu	下拖鄉一吾村	*yid 'ong*	Y. Huang's fieldnotes
Yajiang 雅江 *nyag chu*	Jiaowu	瓦多鄉交吾(伍)村	*lcang bo*	Y. Huang's fieldnotes
	Khalu	瓦多鄉交吾村卡龙	*kha lung*	Y. Huang's fieldnotes
	Murong	木絨鄉木絨村	*mi bzang*	Y. Huang's fieldnotes
	Wuzhi	瓦多鄉吾知村	*dbu rtse*	Gong (2007)
	Waduo	瓦多鄉学优村	*gru rgan chu kha*	Y. Huang's fieldnotes
	Nyato	木絨鄉亞多村	*nyag stod*	Shirai's fieldnotes
	Sasho	木絨鄉沙学村	*sa phyogs*	Y. Huang (forthcoming)

4.1 'we'

The first example is the first-person plural pronoun 'we'. While some dialects distinguish between general and inclusive, we here examine only general forms. We can classify the word forms into two types: those with a velar nasal initial and those with a palatalized initial. Southern exhibit the velar initial, such as *ŋjâ* in Waduo, but the initial consonant is palatalized in the northern dialects, as *ŋ̡jé* in Mätro.

Figure 2 presents the geographical distribution of the forms. The velar- and palatalized-initial types are marked with rounds and triangles, respectively.[1] The map exhibits a dichotomous north-south distribution with the borderline drawn between Jiaowu/Khalu (*ȵa*^{53}/*ŋ̡a*) and other points in Yajiang (e.g., Murong *ŋe*^{55}). This pattern is almost coincident with the distinction seen in previous studies of the two dialect groups, but the border is not coincident with the administrative border between Yajiang and Daofu. The border between the two counties falls between the borders of Xiatuo and Jiaowu but both points have palatalized initials in their word forms: Xiatuo *ŋ̡a* and Jiaowu *ȵa*^{53}.

Let us discuss relative chronology. In this case, we can assume that the palatalized northern forms are more innovative because the root can be traced back to the Proto-Tibeto-

[1] In the map legend, /ŋ̡/ is substituted for the palatal symbol "ȵ" for technical convenience.

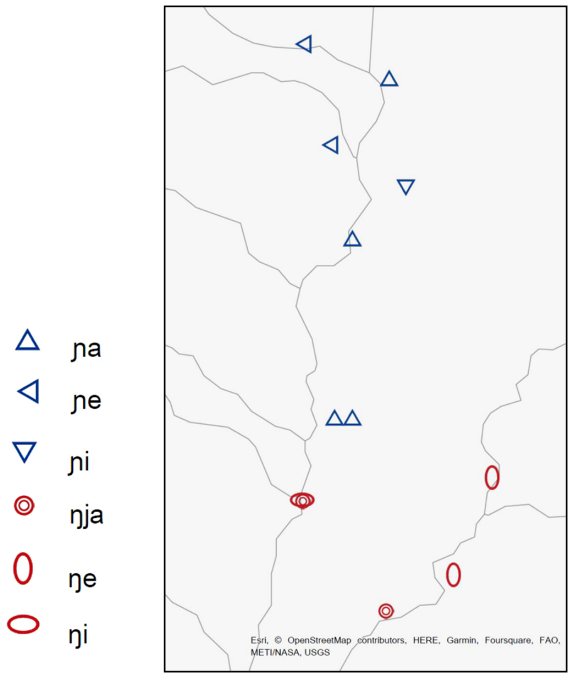

Figure 2 'we' in nDrapa dialects

Burman (PTB) *ŋa-y 'I/ME/1st p. PRONOUN/SELF' in STEDT,[2] which was likely followed by a plural marker.

4.2 'tooth'

The next example is 'tooth', the variants of which are shown in Figure 3. Southern forms have a front vowel, such as Waduo *ɕi*~*çi*, but northern forms have a back vowel, e.g., Mätro *ɕu*. Moreover, in the central area, we find an initial non-sibilant palatal fricative, Xiatuo *çu*. These types are marked with rounds, triangles, and boxes, respectively. The distribution pattern of the vowels is basically same as that seen in the first example, 'we': the primary borderline is located between Jiaowu/Khalu (*ɕhu*^{24}/*ɕu*) and other southern points (e.g., Murong *ɕhi*^{24}). The secondary development *ɕ* > *ç* is found in some parts of the central region.

The correspondent PTB form is *s-wa 'TOOTH'. We can conclude that the front vowel seen in the southern regions is formed by brightening (Matisoff 2004), whereas in the northern regions, the proto-vowel was reduced, and the feature of the glide /w/ was retained. Then, the weakening of the initial sibilant occurred later.

[2] This paper cites the PTB forms from the STEDT database, the on-line version of the database published as Matisoff (2015).

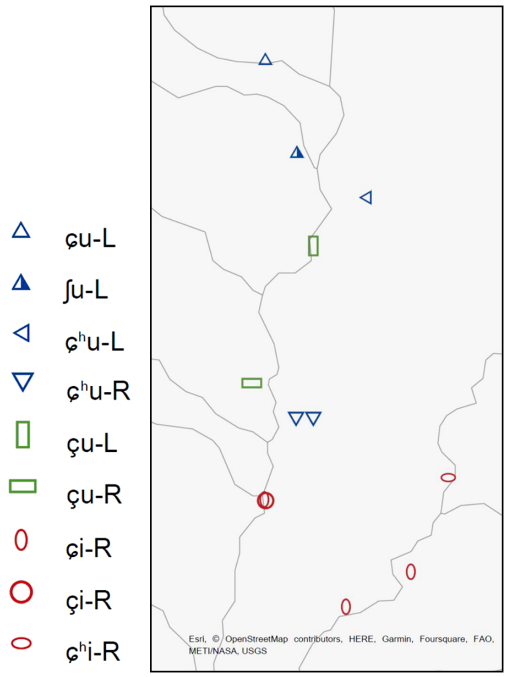

Figure 3 'tooth' in nDrapa dialects

4.3 'tree'

Figure 4 exhibits the geographical distribution of word forms for 'tree'. All dialectal forms are disyllabic. The vowel in the first syllable is open in the southern regions, as *sʰapû* in Waduo, but in the northern regions, it is front, as *seppú* in Mätro. They are marked with rounds and triangles on the map, respectively. Moreover, the examples of the central regions are of the same type as the southern regions. Thus, in this case, we find a dialectal borderline that is different from the first two examples. It is drawn between Kalakhe (*sɛ*^{13}*pu*^{11}) and Xiatuo (*sʰapú*) within Daofu county. The geolinguistic findings lead us to identify a dialect continuum with various patterns of borderlines, as seen in these examples.

4.4 'fish'

All of the dialectal forms for 'fish' are similar, as seen in Figure 5. They can be traced back to the unique Proto-Qiangic etymon *r-dzwa 'FISH'. However, in the southern regions, the vowel is a diphthong, as in the Waduo form *dzyě*, which is formed through brightening of the proto-vowel. Still, in but in the northern regions, the glide and the fronted vowel are fused together to form a monophthong, as in the Mätro form *dzɨ̌*. In the map, the former type is marked with horizontal rectangles, whereas vertical rectangles mark the latter. The borderline is at the same location as that seen for the case of 'tree'.

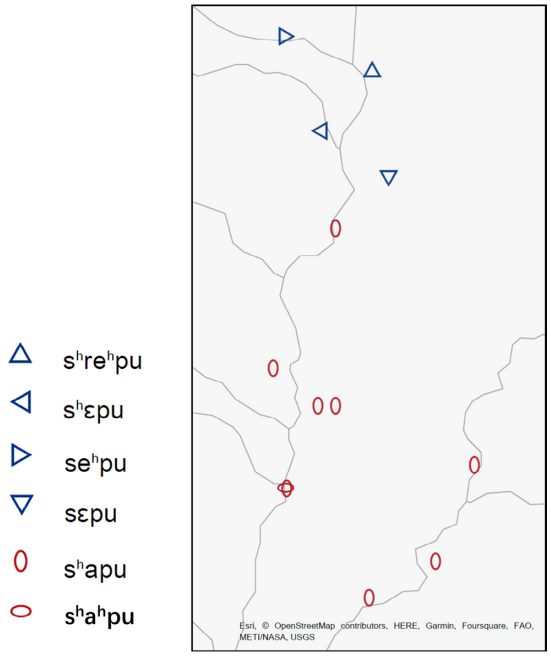

Figure 4 'tree' in nDrapa dialects

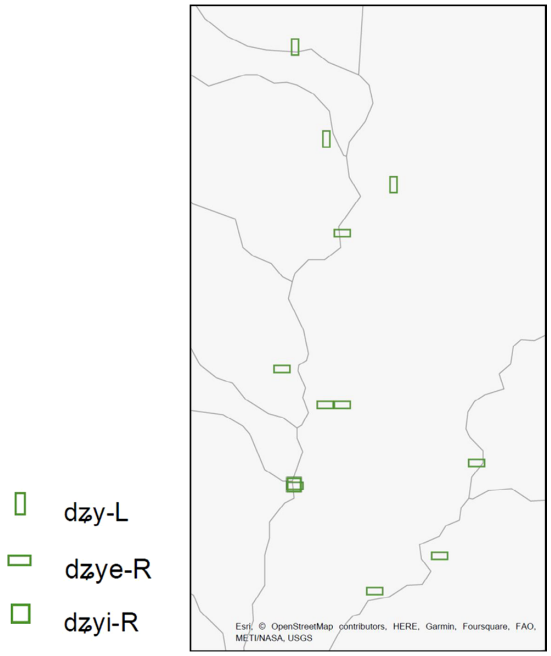

Figure 5 'fish' in nDrapa dialects

4.5 'ear'

The segments for all dialectal forms for 'ear' are very similar, but the suprasegmental features, that is, the pitch patterns, are different between the dialects in the southern and northern regions. Figure 6 describes their geographical distribution. The dialectal borderline for this word is different from both patterns we have examined so far. In regions from Xiatuo to the north, this word has a phonologically low pitch pattern, like *ŋʌrʌ́* in Mätro. This type is marked with vertical rectangles in Figure 6. However, from Yiwu to the south, it has a falling pitch pattern, such as *ɲárə* in Waduo, which is marked with horizontal rectangles.

4.6 'meat, flesh'

For the example of 'meat', we find the cluster /nt^{h}-/ in the north and in some southern regions, such as *nt^{h}ei* in Mätro, but in the other southern regions, the initial cluster is not found, as *t^{h}ĕ* in Waduo, and Xiatuo. In Figure 7, the word forms with a prenasalized initial and without an initial cluster are marked with triangles and rounds, respectively. If we draw the borderline here, the southern two points with triangles are regarded as exceptions. How is this distribution formed?

In fact, this morpheme may exhibit an initial cluster within compounds, even in southern dialects, where the independent form does not show a cluster, e.g., Sasho *zə^{55}tue^{33}* 'monkey'

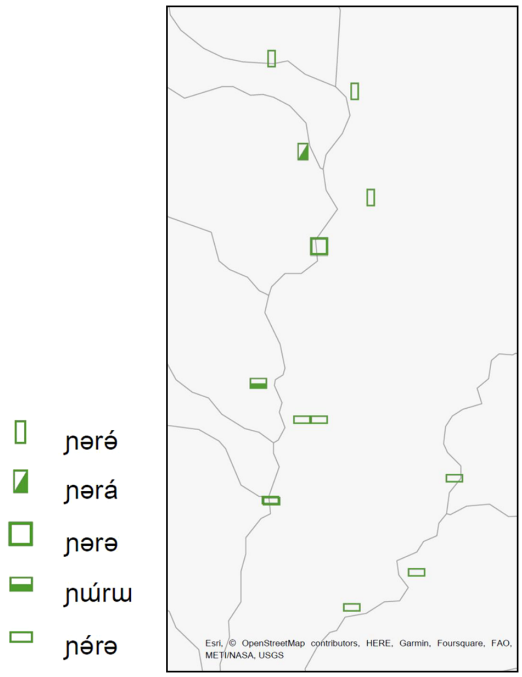

Figure 6 'ear' in nDrapa dialects

+ *tʰɪ²⁴* ‘meat’ > *zə⁵⁵tue⁵⁵ntʰɪ³³* ‘monkey meat’ (Huang forthcoming). Thus, the initial cluster reflects the older form. Consequently, a reasonable hypothesis is that an innovation featuring the loss of clustering occurred and spread, probably at a certain point in the central area. Here we find a peripheral distribution of the older forms.

4.7 ‘belly’

A similar pattern to that seen for ‘meat, flesh’ is found in the map for ‘belly’, but the distribution of the innovation is slightly different. As seen in Figure 8, the Waduo form is *vǐ*, and the Mätro form is *věi*, but in the central area, both *wěi*, and *vě* are found. In this case, the lenition of the initial fricative, v- to w-, is limited to three points in the central region, which we conclude as an innovation.

4.8 ‘eye’

The example of ‘eye’ shows innovative word formation. The northern and southern regions retain the monosyllabic forms: *ŋ̊â* in Mätro or *ɲa* in Waduo, inherited from Proto-Tibeto-Burman. However, in the central regions, a compound form ‘eye’ plus ‘chunk’ is used to denote ‘eye’ such as *ŋapələ* in Xiatuo. In the Mätro dialect, the parallel compound means ‘eyeball’, although it is the general term for ‘eye’ in the central area. In Figure 9, the mono-

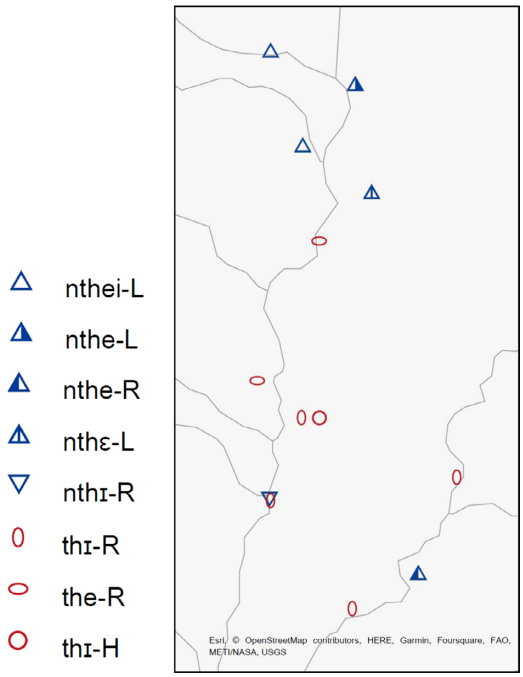

Figure 7 ‘meat’ in nDrapa dialects

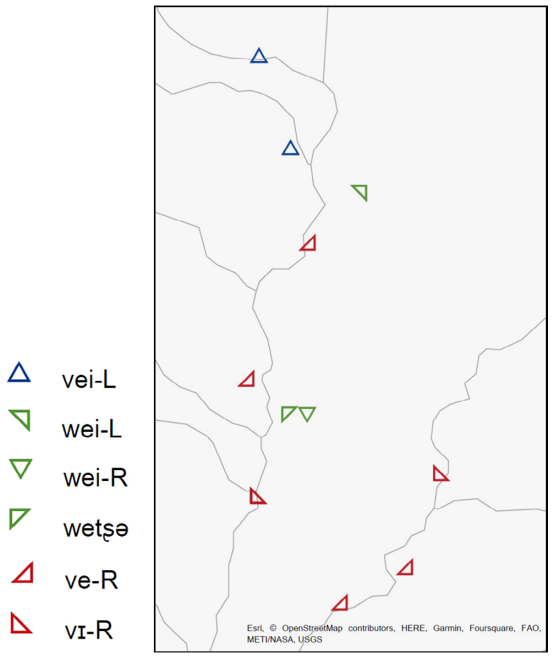

Figure 8 ‘belly’ in nDrapa dialects

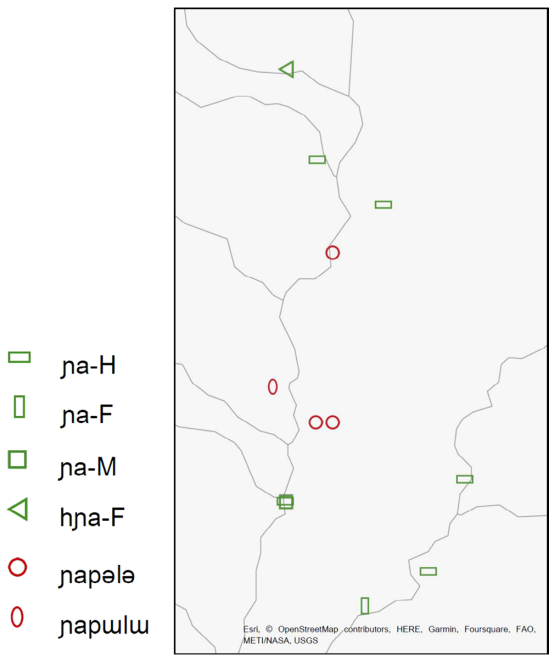

Figure 9 ‘eye’ in nDrapa dialects

syllabic types are marked with boxes or triangles, whereas the compound types are marked with rounds. It exhibits a clear center vs. peripheral distribution, which suggests that an innovation occurred in the center.

4.9 'moon'

From Figure 10, for the map of 'moon', we find a difference in word formation between the southern and northern regions, with a boundary between Jiaowu and southern points. For example, Waduo has *ɻeɲəmtsʰo*, but Mätro has *ɻɛʰʑɿ́*. Although both types share the first morpheme derived from PTB *s-la 'MOON/MONTH', compounded morphemes vary across dialect groups. Moreover, the loss of the cluster occurs in the middle of the area with the *ɻɛvʑɿ́* type, e.g., *ɻězə* in Xiatuo, and the fronting of vowel did not occur in the southmost part with the *ɻɛvʑɿ́* type, e.g., *ɻu*^{55}*vzu*^{33} in Yiwu. In the map, the northern *ɻɛvʑɿ́*, southern *ɻeɲəmtsʰo*, and central types (both initial reduction and non-fronting) are marked with triangles, rounds, and boxes, respectively. Here, we can find a distribution with gradual shifts by latitude: from north to south, the *ɻevʑʌ* type, the *ɻezʌ* type with no cluster, the *ɻɯvzu* type without vowel fronting, and the *ɻeɲəmtsʰo* type.

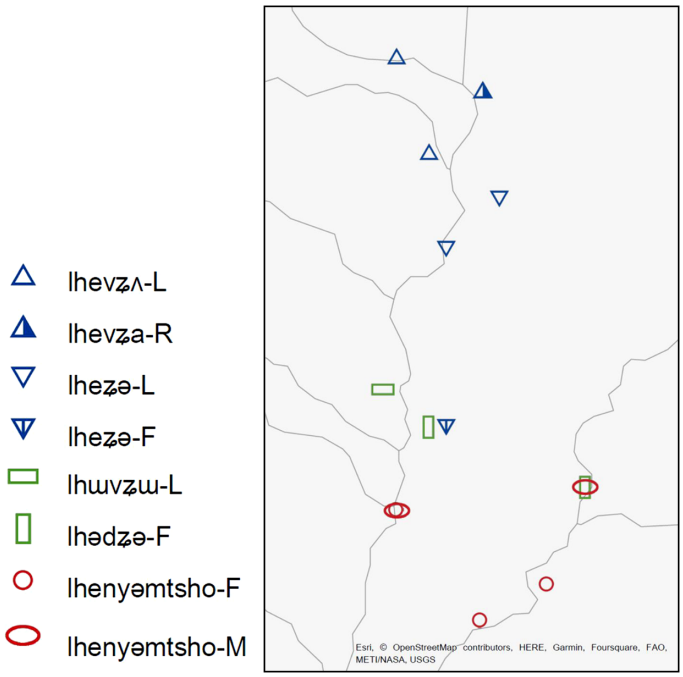

Figure 10 'moon' in nDrapa dialects

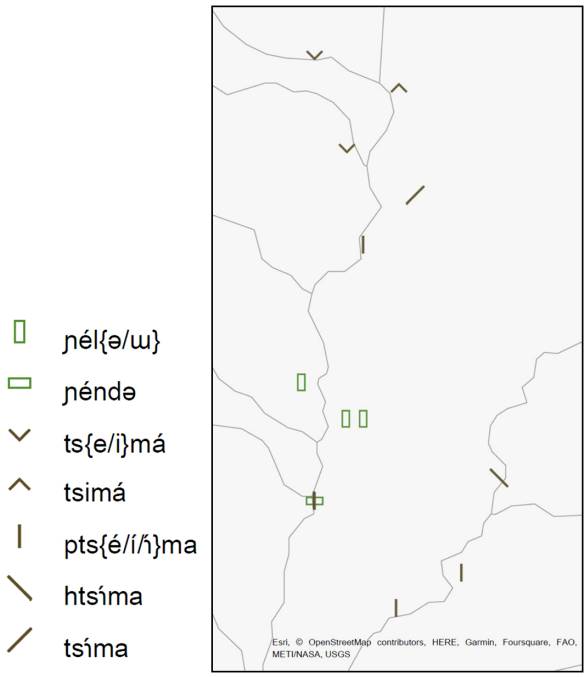

Figure 11 'sand' in nDrapa dialects

4.10 'sand'

The final two examples, 'sand' and 'leaf', involve loanwords. Geographical distributions suggest that loanwords tend to be diffused from the north–south peripherals.

In Figure 11, showing a map for 'sand', the northern and the southern areas show very similar forms, *ptsʃma* in Waduo, and *tsemá* in Mätro, but the central area has completely different forms, such as *ɳélə* in Khalu. In fact, the northern and southern forms are both Tibetan loanwords; the corresponding word of Written Tibetan is *bye ma*. In the map, the Tibetan-loan types are marked with lines, and other types are marked with boxes. The Tibetan influence comes to nDrapa through two major towns, Yajiang in the south, and Daofu in the north. In the central area, indigenous vocabulary is retained. Therefore, by contrast with the pattern of former maps, the forms found in the central area are possibly the older ones.

4.11 'leaf'

As indicated in Figure 12, the word forms for 'leaf' vary across dialects. Comparatively, the *pala* type is the oldest dialectal variant, e.g., *ⁿ̄pala* in Diru. The *pala* type and its subtypes are marked with triangles on the map. However, this form was lost in the western area, being replaced with the word forms which might have been derived from the word

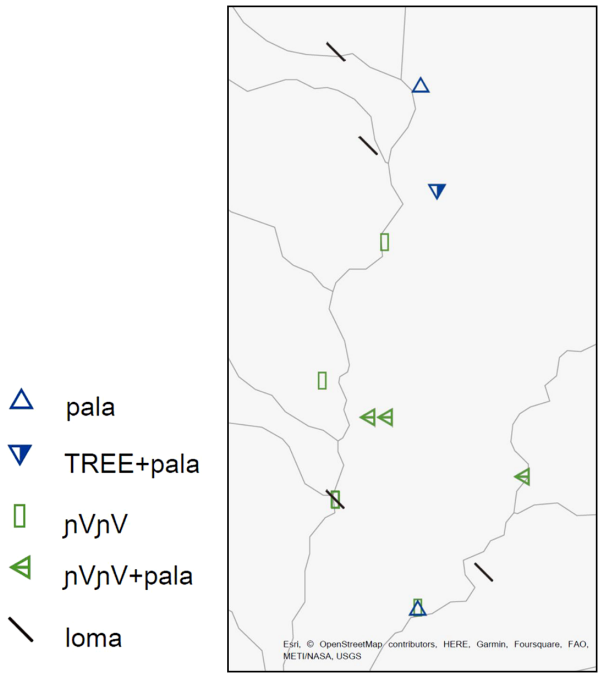

Figure 12 'leaf' in nDrapa dialects

for 'green', e.g., *ɲə̀ɲa* in Waduo, or from the Tibetan loanword, *loma*. The former is marked with rectangles or left-pointing triangles (compound with *pala*), and the latter is marked with lines in the map. Again, the Tibetan loanword is found in the northmost and the southmost parts of the area.

5. Discussion

Let us discuss how to classify nDrapa dialects. Figure 13 presents possible dialect borders from those found in our data. Here, we only draw horizontal lines to make the points clear, although other patterns are sporadically found, as observed earlier.

Table 2 shows that the items in each column show different word forms between north and south of the designated line. For example, the word forms for 'we' (Section 4.1) differ between the north and the south of line E. We designate with *(ex)* items that show exceptional distribution of word forms. For example, the map for 'belly' (Section 4.7) exhibits two exceptional points of lenition in the central area. We display certain Swadesh basic vocabulary items in Table 2 excluding obvious borrowings, sporadic distributions, and uniform distributions.

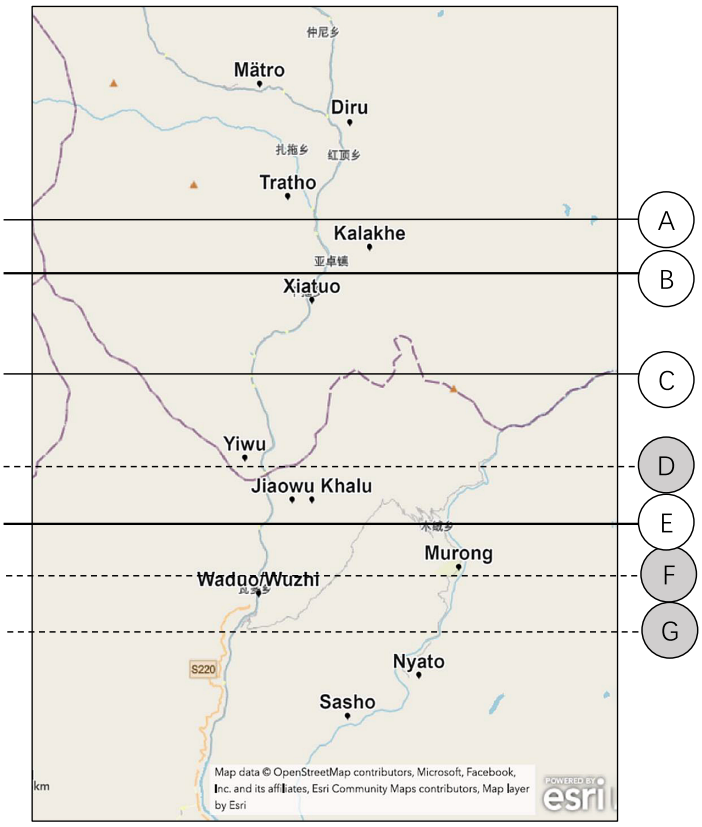

Figure 13 Horizontal borderlines of nDrapa dialectal forms

Table 2 Items corresponding to each boundary

A	'this', 'nose' (ex [=with exceptions]), 'heart', 'to bite', 'to sit' (ex), 'rain'
B	'what' (ex), 'small', 'fish', 'tree', 'leaf' (ex), 'meat' (ex), 'bone' (ex), 'egg' (ex), 'hair of head', 'breasts' (ex), 'to know' (ex), 'kill', 'to fly', 'to give' (ex), 'road', 'white' (ex), 'night' (ex), 'full'
C	'ear', 'mouth' (ex), 'to drink', 'to say'
E	'we', 'many', 'foot' (ex), 'cold (weather)'
A&E	'big' (ex), 'belly' (ex), 'seed' (ex), 'moon', 'round'
B&E	'eye', 'tooth', 'to stand' (ex), 'stone' (ex)
Other	D 'root' (ex), A&C 'bird', 'louse', B&C 'all', 'person', B&F 'knee' (ex), B&G 'ash' (ex), C&D 'who', 'sun', C&E 'to swim' (ex), 'sand', C&F 'neck' (ex), D&E 'to eat', 'to sleep'

The most significant borderline is B, distinguishing 26 items as an isogloss. This number includes cases with north-south isoglosses at more than one location. In addition, Line E is also an important isogloss, as 17 items have a borderline at this position. On the other hand, only one item is relevant to Line D, the boundary assumed by a dichotomy in the previous studies. This table indicates that the most significant north–south borderlines are drawn at B and E. However, other possible borders of dialectal forms also exist, reflecting a dialectal continuum.

6. Conclusion

This study examines the dialectal classification of nDrapa. From the geographical distribution of basic word forms, we conclude that there are three dialect groups in nDrapa: southern, central, and northern. The most significant dialectal borderline can be drawn in the south at two points near the village of Jiaowu (瓦多鄉交吾(伍)村), marked as Jiaowu and Kalu in Figure 13. The line between these two points and the southern points divides the southern and central groups of dialects. The boundary does not coincide with the administrative boundary between Yajiang and Daofu. The border between the central and northern dialect groups is less clear. In particular, Kalakhe and Xiatuo show both central and northern features, depending on the particular vocabulary item. However, most central areas are characterized by a combination of some basic vocabulary shared by the northern and southern varieties, respectively.

In addition, we find language change patterns reflected in linguistic maps: loanwords come from both north and south of the nDrapa area, and therefore the central varieties tend to retain indigenous vocabulary. On the other hand, innovation occurs at any point. Thus, some items show a south–north dichotomous distribution, while others show center-versus-peripheral distribution, that is, only the central varieties exhibit innovated forms.

Evidence of dialect differences will continue to be gathered if sufficient data are collected from another four villages of the central area for future phonological, lexical, and morphosyntactic comparison.

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Appendix: Word forms in the three dialect groups

	Southern (Waduo)	Central (Jiaowu Khalu)	Central (Yiwu)	Northern (Zhongni Mätro)
‘we’	ŋja^{53}	ŋ̡a	ŋ̡e^{55}	ŋ̡jɛ́
‘tooth’	ɕi^{24}	ɕŭ	ɕu^{24}	ɕŭ
‘tree’	s^{h}a^{33}pu^{53}	s^{h}apû		seppú
‘fish’	dʑye^{24}	dʑyě	dʑye^{24}	^{ɦ}dʑy̆
‘ear’	ɲə^{55}rə^{33}	ŋ̡ərə	ŋ̡ɯ^{55}rɯ^{33}	ŋ̡ʌrʌ́
‘meat, flesh’	t^{h}e^{24}	nt^{h}é	t^{h}e^{24}	nt^{h}ěi
‘belly’	vɪ^{24}/k^{h}ʊ^{33}	weĭ	ve^{24}	věi
‘eye’	ɲa^{33}	ŋ̡ápələ	ŋ̡a^{55}pɯ^{55}lɯ^{33}	ŋ̊â
‘moon’	l̥e^{33}ɲə^{33}mts^{h}o^{33}	l̥éʑə	l̥ɯ^{55}vʑɯ^{33}	l̥ɛ^{ɦ}ʑʌ́
‘sand’	ptsʅ^{55}ma^{33}/ɲe^{55}ndə^{33}	ŋ̡élə	ŋ̡e^{55}lɯ^{33}	tsemá
‘leaf’	ɲə^{55}ɲa^{33}	ŋ̡áŋ̡apala	ŋ̡a^{33}ŋ̡a^{53}	lomá