

ALLOPHONIC VARIATION AND THE BONTOK-KANKANAËY VOICED STOPS

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1. INTRODUCTION

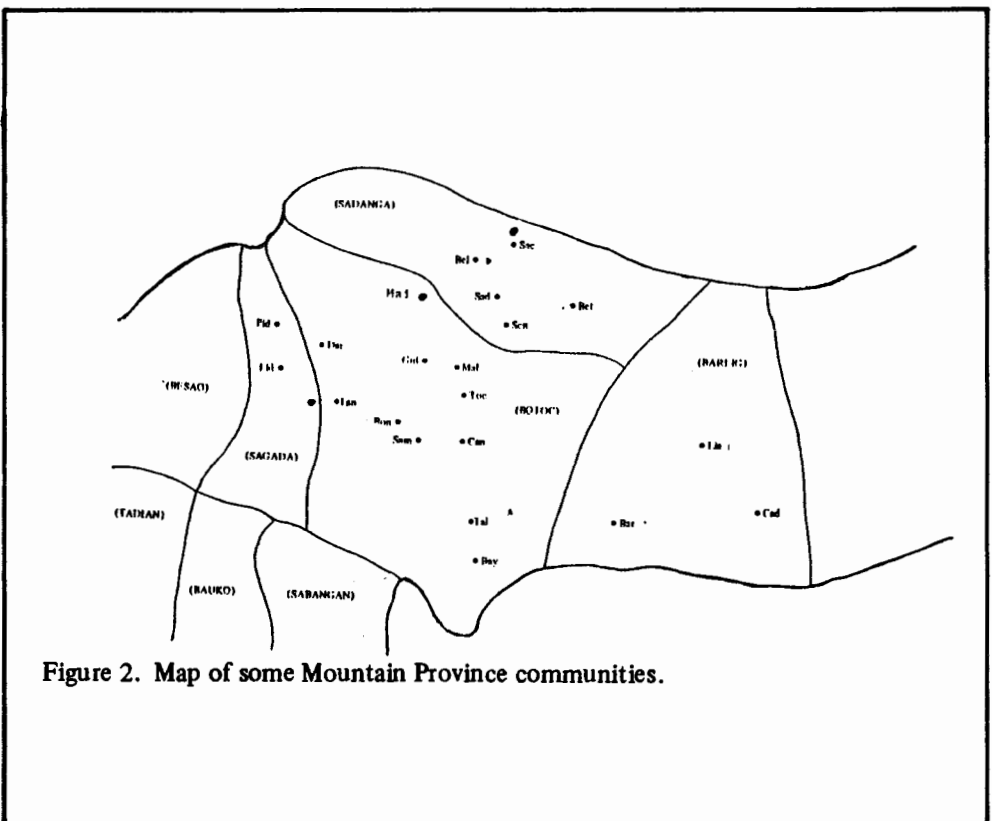
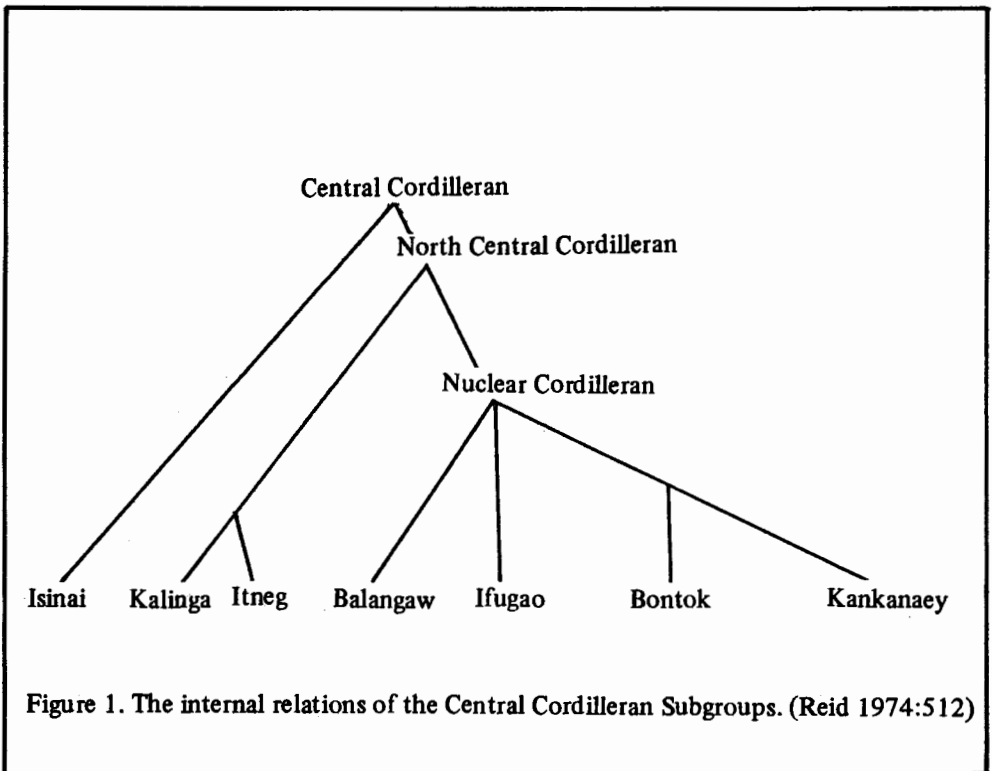
Bontok and Kankanaey are two closely related languages spoken in Mountain Province and the northern municipalities of Benguet Province in the Cordillera Central of northern Luzon, Philippines. Reid (1974) places them in the nuclear sector of North Central Cordilleran, co-ordinate with Ifugao and Balangaw (Figure 1). The dialects of Bontok and Kankanaey, as well as those of other Central Cordilleran languages, exhibit considerable variation in phonology and lexicon. One area of phonological diversity is that of allophonic variation among the voiced stop phonemes. Most of this occurs in Bontok-speaking communities.¹ Other than the dialects spoken in the Sagada barangays of Pide, Fidelisan, and Tanulong, there is no appreciable variation among the voiced stops in Kankanaey, here treated as one speech form (Knk). The map of Mountain Province in Figure 2 locates the communities relative to each other.

2. THE BONTOK-KANKANAËY VOICE STOPS

Proto-Central Cordilleran (PCC), and its North Central Cordilleran (PNCC) descendant, had 14 consonant phonemes, 4 phonemic vowels, and contrastive stress (Reid 1974: 513):

¹The Mountain Province communities treated here are:

Bar	Poblacion, Barlig
Bay	Bayyo, Bontoc
Bel	Belwang, Sadanga
Bet	Betwagan, Sadanga
Bon	Bontoc Ili, Bontoc
Cad	Cadaclan, Barlig
Can	Caneo, Bontoc
Dar	Darlic, Bontoc
Fid	Fidelisan, Sagada
Gui	Guinaang, Bontoc
Lia	Lias, Barlig
Mai	Maimit, Bontoc
Mal	Maligcong, Bontoc
Pid	Pide, Sagada
Sac	Saclit, Sadanga
Sad	Poblacion, Sadanga
Sam	Samoki, Bontoc
Scn	Sacasacan, Sadanga
Tal	Talubin, Bontoc
Tan	Tanulong, Sagada
Toc	Tocucan, Bontoc



Consonants	Vowels
*p *t *k *ʔ	*i *i̥ *u
*b *d *g	*a
*m *n *ŋ	
*l	Stress
*s	*V̌
*w *y	

The canonical forms for the syllable were CV and CVC. This phonemic inventory was inherited intact by Proto-Bontok-Kankanaey (PBK), although the back vowel is usually represented by *o*, its most common phonetic manifestation in current dialects.

At some point in PNCC, if not in PCC, the voiced stops developed voiceless allophones in syllable-initial position (Reid 1974:513). There is ample evidence of this in modern-day Balangaw, Bontok, northern Ifugao, central Kalinga, and eastern Itneg, which constitute the core are of NCC languages. The reflexes of the PNCC prevocalic allophones are mostly voiceless affricates, aspirates and fricatives. Balangaw and Central Bontok have:

$$\begin{bmatrix} b \\ d \\ g \end{bmatrix} \rightarrow \begin{bmatrix} f \\ t_s \\ k \end{bmatrix} / _ V.$$

Some dialects of Kalinga, such as that spoken in Guinaang (Gieser 1958, 1970), have:

$$\begin{bmatrix} b \\ d \\ g \end{bmatrix} \rightarrow \begin{bmatrix} p^i \sim p^p \\ \check{c} \sim \check{j} \\ k \sim g \end{bmatrix} / _ V.$$

The dialect of Ifugao spoken in Batad, Banaue (Newell 1970), has:

$$\begin{bmatrix} b \\ d \\ g \end{bmatrix} \rightarrow \begin{bmatrix} p_v^x \\ t_h \\ k \end{bmatrix} / _ V.$$

while that of Gohang, Banaue (Newell 1957), has:

$$\begin{bmatrix} b \\ d \\ g \end{bmatrix} \rightarrow \begin{bmatrix} p_v^f \\ t \\ k \end{bmatrix} / _ V.$$

In word-initial position the dialect of Bontok spoken in the Poblacion of Sadanga municipality has:

$$\begin{bmatrix} b \\ d \\ g \end{bmatrix} \rightarrow \begin{bmatrix} f_h \\ t_h \\ k \end{bmatrix} / _ V.$$

It would appear from this evidence that the early character of the voiceless allophones in PNCC was that of aspirated stops:

$$* \begin{bmatrix} b \\ d \\ g \end{bmatrix} \rightarrow * \begin{bmatrix} p^h \\ t^h \\ k^h \end{bmatrix} \quad / _ V.^2$$

A further development, still within PNCC, shifted the fricative release closer to the point of articulation of the non-back consonants, giving us:

$$* \begin{bmatrix} b \\ d \\ g \end{bmatrix} \rightarrow * \begin{bmatrix} p^p \sim p^f \\ t^s \\ k^h \end{bmatrix} \quad / _ V.$$

This, then, is the series of allophones likely to have been inherited by PBK, wherein the only widespread change was the simplification of the labial to *[f].

3. THE PROBLEM

Reid (1974:514) observes that the syllable-initial spirants do not occur in Knk nor in the western, or Inlaod, dialect of Itneg. They are also lacking in Bayyo Bontok, eastern Kalinga, and central and southern Ifugao. In other words, virtually all peripheral dialects of NCC once had voiceless spirant allophones of the voiced stops and later lost them. Moreover, certain dialects of Bontok, Kankanaey and Kalinga, constituting an interface between the core and periphery, have asymmetrical series of allophones. Tal, for example, has:

$$\begin{bmatrix} b \\ d \\ g \end{bmatrix} \rightarrow \begin{bmatrix} v \\ dʒ \\ g \end{bmatrix} \quad / _ V.$$

and Tan has:

$$\begin{bmatrix} b \\ d \\ g \end{bmatrix} \rightarrow \begin{bmatrix} b \\ dʒ \\ k^h \end{bmatrix} \quad / _ V.$$

Referring to the absence of the spirants Reid remarks (1974:514):

It is assumed that Kankanaey and Inlaod Itneg lost the variants as a result of the considerable influence of Ilokano upon them, an influence noted in many other areas of the languages besides phonology.

While the influence of Ilokano is undeniable, it alone cannot and need not account for the extensive reversion to voiced stop articulation in virtually all areas on the periphery of NCC. Further, since Ilokano has neither voiced nor voiceless spirant allophones of the stops, its influence cannot explain why a dialect would have an asymmetrical series such as those above.

Instead, the influence of Ilokano must be seen as a contributing factor, albeit a very strong one, to a process already inherent to the language. This is the process commonly called 'strengthening' in natural generative phonology. The diversity of prevocalic allophones of voiced stops in BK dialects (and elsewhere in NCC) is the result of the degree to which this process has occurred.

²An even earlier development wherein the voiced stops were merely aspirated, later to be devoiced, is possible but totally unattested.

4. THE ARGUMENT

'Strengthening' refers to the modification of a sound for the purpose of making it more marked or distinct from other sounds. This occurs preferentially in 'strong' environments, such as in syllable-initial position (Hooper 1976:199-200). While consonantal strength hierarchies are language specific, certain universal tendencies have been noted: stops are stronger than continuants, voiceless obstruents are stronger than voiced obstruents, nasals are stronger than liquids, and so forth (Hooper 1976:201-207). Strength relations, thus, are measured on several, parameters.

Foley (1977), in his development of 'theoretical phonology', provides some useful insights into the measurement of strengthening and weakening, especially in terms of identifying the operative parameters. Points of articulation are ranked according to their propensity, within a language, to experience change. Strong segments tend to strengthen, weak segments tend to weaken, and they do so preferentially in strong and weak environments respectively. Adopting Foley's notion of the 'universal inequality condition' we can consider phonological changes to have occurred sequentially within a set, rather than to have taken place simultaneously within a 'natural class'. Variation in the voiced stops indicates that for all of NCC the ranking is:

labials	alveolars	velars
3	2	1
←—————		

Thus we expect labials to undergo strengthening changes before the corresponding alveolars and velars do, and we expect velars to experience weakening prior to the other two.

'Modular depotentiation' is another useful concept proposed by Foley (1977:123):

A special case of manifestation of strengthened elements arises when the element is already the strongest element and cannot appear phonetically as a stronger element. In this case, maintaining the closure property (that operations on elements in a set yield an element in that set), the strengthened strongest element undergoes modular depotentiation, appearing phonetically as the weakest element.

Since the resultant segment is necessarily weaker than its origin, the term 'strengthening' is highly misleading. Another term, such as 'promotion', would be more appropriate for cases such as these.

Similarly, complex segments may be promoted in simplification or, in Foley's terms, 'binding'. Herein, the features of the two components of the segment are combined in those of a single segment, such as the reduction of [t^h] to [θ]. And finally, promotion in assimilation alters a feature of one or both of two contiguous segments or components of a complex segment such that they share a feature which previously they did not. We generally expect, of course, the weaker element to assimilate to the stronger, such as in the frequent case of a nasal assimilating to the point of articulation of a following stop: [np] → [mp].

On the basis of these processes of the promotion of sounds, it is possible to derive the Knk and Bay voiced stop articulations from the PNCC affricates.

5. THE EVIDENCE

Given the PCC voiced stop phonemes */b d g/, the initial change was a double promotion—devoicing together with aspiration—in prevocalic position,³ thus maintaining contrast with the voiceless stop phonemes, which were unaffected. Subsequently, promotion in assimilation affected the labial and the alveolar, essentially moving the fricative release to the point of articulation of the stop:

³In certain NCC-speaking communities, the process has been extended to the weaker post-vocalic environments (Reid 1974:514).

$$* \begin{bmatrix} ph \\ th \\ kh \end{bmatrix} \rightarrow * \begin{bmatrix} p^p \sim p^f \\ t^s \\ kh \end{bmatrix}$$

Within PBK, the labial again underwent promotion, this time in simplification:

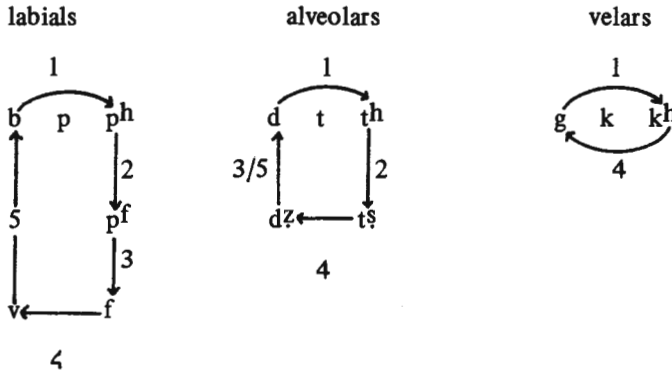
$$* \begin{bmatrix} p^f \\ t^s \\ kh \end{bmatrix} \rightarrow \begin{bmatrix} f \\ t^s \\ k^s \end{bmatrix}$$

At this point the processes appear to have halted in Central Bontok, but they continued to operate elsewhere. In Dar, the labial and the alveolar, but not the velar, were promoted

through modular depotentiation to form the series $\begin{bmatrix} v \\ dz \\ kh \end{bmatrix}$. In Tal, the process was ex-

tended to the velar yielding the series $\begin{bmatrix} v \\ dz \\ g \end{bmatrix}$. From this, promotion in manner of arti-

culation and promotion in simplification account for the Knk and Bay series $\begin{bmatrix} b \\ d \\ g \end{bmatrix}$. Figure 3 summarizes the changes proposed here for KnK and Bay.



1. Promotion in voice and aspiration.
2. Promotion in assimilation.
3. Promotion in simplification.
4. Modular depotentiation.
5. Promotion in obstruence.

Figure 3 Summary of changes affecting stops from PCC to KnK and Bay.

The differential promotion of labials and alveolars, but not the velars, accounts for the asymmetrical series found in northern Sagada: Pid and Fid have $\begin{bmatrix} d \\ t^s \\ kh \end{bmatrix}$ while Tan

has $\begin{bmatrix} b \\ dz \\ kh \end{bmatrix}$. In the latter community, in fact, the labial has been further promoted via mo-

dular depotentiation, at least optionally and only before the low vowel /a/, to the weakest of the voiced stop series, [g]; [gaŋaʔan] 'Bangaan' (name of a barangay).⁴

The northern Bontok-speaking communities provide evidence of the relative strengths of environments. If we assume 'strength' to mean a condition which promotes the sorts of change discussed here, syllable-final positions are certainly weaker than syllable-initial positions, and word-initial position is weaker than syllable-initial position within the word. In Sad, which has retained the PNCC *[tʰ] in word-initial position, the segment is promoted in assimilation to [tʰʂ] when it is preceded by a consonant in obstruence via modular depotentiation to [d] when the preceding sound is a vowel or voiced (non-geminate) consonant:

[tʰowá]	/dowá/	'two'
[ʔasɪdthɪr]	/qasɪddɪr/	'thick'
[tomoktʂó]	/tomokdó/	'to sit'
[ʔastʂi]	/qasdɪ/	'there'
[tʰidá]	/didá/	'they'
[tʰiŋdiŋ]	/diŋdiŋ/	'wall'

Similarly Mai, Bel and Scn have $\begin{bmatrix} f \\ tʂ \\ k \end{bmatrix}$ in word-initial position and when placed by a voiced non-geminate consonant Mai has $\begin{bmatrix} v \\ dʂ \\ g \end{bmatrix}$ and Bel and Scn have the series $\begin{bmatrix} b \\ d \\ g \end{bmatrix}$

In the speech of Mal the placement of stress determines the promotion of the segments in intervocalic environments:

$$\begin{bmatrix} f \\ tʂ \\ k^h \end{bmatrix} / \acute{V} _ V \text{ and } \begin{bmatrix} v \\ d \\ g \end{bmatrix} / V _ \acute{V}.$$

Whereas previously we would have viewed certain of these changes as instances of lenition, specifically the assimilation in voicing to contiguous voiced segments other of the changes do not conform to that traditional notion.

Three additional Bontok-speaking communities exhibit variants not found elsewhere in BK. In Lia, both of the velar stops have been promoted in assimilation to a following high front vowel, resulting in a voiceless alveopalatal affricate:

[čicó]	or	[tʂitʂó]	/gidó/	'earthquake'
[čítɔŋ]	or	[tʂítɔŋ]	/kítɔŋ/	'forehead'

In Can, the process of simplification has been extended beyond the labial to the alveolar and the velar producing the set $\begin{bmatrix} f \\ tʂ \\ h \end{bmatrix} / _ V$, the alveolar becoming totally dental, its simplification to a fricative perhaps blocked by phonemic /s/, and the velar *[k^h] passing through [x] to [h].

The eastern dialect of Bontok spoken in Barlig Poblacion and Cadaclan manifests a palatal off-glide of the voiceless allophones before the low vowel. This is obligatory in the case of the labial but optional, and infrequent, with the alveolar and velar stops:

[fʏató]	/bató/	'stone'
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⁴Reid (1983: personal communication) reports similar variation in Fid.

[ʔáfya] /qāba/ 'taro root'

This feature, which may be considered another incidence of promotion in that it makes the allophone more complex, is widespread enough to be assigned to PNCC. It is found in Nuclear Cordilleran, as in the Ha-gi dialect of Balangaw (Shetler 1976:16) and in north-eastern Ifugao (Guinuhong, Mayoyao: [pɸyæ rʌ] /bāla/ 'lungs'). But it is also found in northwestern Kalinga (Talang, Balbalasang: [vuvyáʔe] /bubáqe/ 'female') and in central Kalinga (Dieser 1958: 14-15).⁵

6. CONCLUSION

The BK voiced stop phonemes exhibit a wide range of phonetic realizations in pre-vocalic environments, from the voiceless spirants of Central Bontok to the voiced stops of standard Kankanaey. Examination of the series of variants together with their geographical distribution leads to the conclusion that the promotive processes which initially formed the allophones in the parent language have continued to operate in the modern period, and they have done so most thoroughly in those communities farthest removed from the nucleus of CC languages. The end result is a total reversion to voiced stop articulation in Knk, Bay, and elsewhere on the periphery of CC.

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⁵ A later promotion in assimilation, not affecting BK, also occurred in PNCC whereby the glide shifted to labio-velar articulation. In northeastern Ifugao, Mayoyao Proper has [pɸʷ] as in [pɸʷato] 'stone'. Southern Kalinga, such as the dialect spoken in Tulgao, Tinglayan, shows this, as well, as in [xɸʷaxɸʷa] /baba/ 'tooth'.