The historical development of Lower Cross consonants[1]

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Abstract

This paper presents a reconstruction of the consonant system of Proto-Lower Cross and examines the development of this parent system into those of the various present-day Lower Cross languages. The methodology used deviates somewhat from tradition in that greater attention to phonetic detail than usual is employed, following the principle that reconstructions should be constrained by the phonetic evidence to hand, and comparison is made with related forms from outside the group. Questions of particular interest that are examined include the development of the nasal series, the reconstruction of Proto-Lower Cross ***l**, developments involving labio-velars, and the implications of the absence of a fortis–lenis contrast in Lower Cross. Finally, the implications of the development of Lower Cross consonants for sub-grouping within Lower Cross are discussed.*

1. Introduction

The Lower Cross language group is situated in South-Eastern Nigeria, in the lower part of the Cross River basin. The languages of the group are found in three contiguous Nigerian states in this coastal region: Rivers, Akwa Ibom, and Cross River, as well as across the international frontier in the Isangele subdivision of South-Western Cameroun. Lower Cross is classified as part of the Delta-Cross group of Cross River, which in turn is part of the Benue-Congo branch of Niger-Congo (Faraclas 1989). In this paper, a reconstruction of the consonant system of Proto-Lower Cross is presented, along with discussion of

1. My thanks to Roger Blench, Tom Cook, Nick Faraclas, Kay Williamson and the anonymous reviewer for comments and suggestions on earlier versions of this paper.

JALL 16 (1995), 41–70

0167–6164/95/0016–041

related issues. For the purposes of the present work, Lower Cross is considered to comprise 20 languages, or lects. There is a high degree of mutual intelligibility among some of them, and one might therefore be tempted to see these as dialects of the same language, or to see the entire group as composed of a number of dialect clusters or language clusters. Each of them, however, has a contribution to make to our understanding of the sound system of Proto-Lower Cross and the changes it has undergone in the course of the evolution of these present day languages. For this reason, they are here all treated on a par with each other.

2. Methodology

The approach to historical reconstruction adopted in this paper differs to an extent from that traditionally fostered by historical linguists and exemplified in the writing of linguists such as Meillet (1966), Lehmann (1962), or Peeters (1988) who argue that in doing reconstruction we are able only to arrive at formulae which express relationships among elements of sets of correspondences, and that the results of attempts at phonetic reconstruction are always hypothetical. Rather, the approach of Elugbe (1989) or especially Lass (for example Lass and Higgs 1984; Lass 1993) seems less defeatist and more concerned with the actual mechanisms of sound change. In many circumstances it is possible to reconstruct with a fair degree of confidence the phonetic nature of a proto-language, given sufficient information concerning the phonetics of the daughter languages; that is, accepting that sound change results to a large extent from the convergence of a particular set of phonetic conditions, those conditions must be reconstructable based on information from the reflexes. An obvious corollary to this is that if a change is attributed to a particular conditioning environment, then that environment must have been capable of bringing about the change attributed to it.

Therefore, while the methodology for reconstruction used here is based in the principles of the comparative method, these principles are supplemented, and the results of their application tested, by phonetic information. In other words, and in agreement with Pagliuca and Mowrey (1987), reconstructions should be constrained by the phonetic evidence to hand, even if the outcome is a skewed distribution phonologically; this calls into question the established view (Martinet 1955; Capo 1992), that pattern congruity or a "desire" for symmetry, plays a motivating role in sound change.[2]

2. This is not to suggest that perceptual factors, or the need to maintain phonological oppositions, play no role in sound change. But these factors are quite distinct from considerations on pattern symmetry as often proposed by phonologists.

In addition, whenever possible, cognate words from other Delta-Cross languages or reconstructions from other branches of Delta-Cross and beyond have been examined, to aid in the reconstruction of individual lexical items. Reconstruction is thus assumed to be a "forward" as well as a "backward" looking process.

Given this approach, the need for more than one level of transcription will be understood. Transcriptions therefore should not be interpreted as phonemic unless enclosed in phonemic brackets; rather, they should be seen as broad phonetic (that is, containing the detail necessary to substantiate a given argument), as it is phonetic information which is to a large extent important in understanding sound change. On the other hand, while some discussion is given as to the probable phonetics of reconstructed forms, these are given in phonemic transcription. Systematic reconstruction of the vowel and tone systems of Proto-Lower Cross have yet to be completed, and to this extent the Proto-Lower Cross reconstructions in this paper are tentative. In particular, while it seems probable that Proto-Lower Cross contained more evidence of a pre-Lower Cross [ATR] harmony system than currently exists in any Lower Cross language, no indication of this is yet available in the reconstructed forms.

The core of the database used for the reconstruction was a basic vocabulary wordlist, based on the Ibadan 400 wordlist, but expanded to 565 words. This data (give or take a few words) was available for all the lects under study. In addition, for several of the lects (especially Ibibio, Efik, Ekit, Oro, and Usaghade) substantial other material was available, and for some (especially Ibibio and Anaang), a range of material from different dialects. Unless otherwise indicated, all the data used was collected in fieldwork carried out by the author, primarily during the period 1983–1986, or during subsequent field trips to the Lower Cross region in 1988, 1990, and 1992.

3. The consonant system of Proto-Lower Cross

In presenting the reconstructed system, primary focus is placed on consonant occurrences in stem initial position, for although some Lower Cross languages currently have consonant oppositions which do not occur stem initially (for example Ekit and Ibibio), these do not appear reconstructable to Proto-Lower Cross. Rather than present the consonant inventories of each Lower Cross language, Table 1 shows the major consonants that exist phonetically in Lower Cross in stem initial position. For the most part, each is phonemic in at least one Lower Cross language. Table 2 presents the reconstructed inventory of Proto-Lower Cross.

Table 1. *Major phonetic consonant segments of the Lower Cross languages occurring in stem-initial position*

	labial	labio-dental	alveolar	palato-alveolar	palatal	velar	labialized velar	labial-velar
nasal	m		n		ɲ		ŋʷ	
stop	p b		t d		ɟ	k g	kʷ gʷ	kp gb
fricative	β	f v	s z		ʝ			
affricate				tʃ dʒ	ʄ			
lateral			l					
tapped	ɓ		ɾ					
approximant					j			w

Table 2. *Reconstructed consonant phonemes of Proto-Lower Cross occurring in stem-initial position*

	labial	labio-dental	alveolar	palato-alveolar	palatal	velar	labialized velar	labial-velar
nasal	m		n		ɲ	ŋ		
stop	b		t d		ɟ	k	gʷ	kp
fricative		f	s					
affricate								
lateral			l					
tapped								
approximant								

3.1. *Controversial questions in Proto-Lower Cross reconstruction*

Some of the questions of interest include the number of nasal consonants that existed in Proto-Lower Cross, whether palatal stops are reconstructable, and the number of consonants having a velar place of articulation. These are all treated in turn, during the discussion of individual reconstructions. Other than these, one of the more interesting questions in the reconstruction has to do with the possible existence of a fortis/lenis contrast in Proto-Lower Cross. A contrast between

fortis and lenis consonants has been widely postulated as reconstructable for other languages groups that are relatively closely related to Lower Cross: Bantu (for example, van Leynseele and Stewart 1980) and Edoid (Elugbe 1989) to name but two within Benue-Congo. Closer to Lower Cross, there is apparently some evidence for such a contrast in the Delta-Cross group. In Central Delta, Elugbe and Williamson (1984) have argued for this in pre-Abua, and Alex (1989) has reconstructed it for Proto-Central Delta. Ikoro (1989) does not reconstruct an extensive fortis/lenis distinction for Proto-Keggoid (Ogoni), but does suggest it existed for voiceless labial stops. And in Upper Cross, which is perhaps the Lower Cross group's closest relative, both Dimmendaal (1978) and Sterk (no date) have reconstructed a fortis/lenis opposition. In this work, I will argue against reconstructing such a distinction for Proto-Lower Cross.

One of the problematic aspects of the fortis/lenis opposition reconstructed for the other branches of Delta-Cross is determining what the phonetic nature of this opposition would have been. There is some agreement that length must have played a role in the contrast (Sterk, no date; Elugbe and Williamson 1984), while Dimmendaal (1978) raises the possibility that VOT (that is, fortis consonants being aspirated) may have been a primary phonetic correlate of the opposition in Proto-Upper Cross. Sterk (1979, no date) also argues that synchronically in the Upper Cross languages, the fortis/lenis distinction is manifested either as one of length or "strength of articulation", and points out that in some languages the earlier opposition has been neutralized. The relevance of this issue to the present study is that an opposition that is realized synchronically as length in some languages, and strength of articulation in other related languages, has apparently evolved from the same "parent" opposition; the phonetic nature of this earlier opposition should presumably be discoverable, as only a limited set of phonetic attributes in the parent language could give rise to the variety of present-day reflexes.

In addition to the question of the phonetic correlate(s), there are numerous discrepancies between Dimmendaal's and Sterk's reconstructions for the Proto-Upper Cross consonant system, as well as a lack of correspondence between Proto-Upper Cross and other branches of Delta-Cross with regard to the fortis/lenis distinction. These differences need to be reconciled, and correspondences established between evidence for the opposition in Upper Cross and other branches of Delta-Cross, before we have strong evidence for the existence of a fortis/lenis opposition in their latest common ancestor, Proto-Delta-Cross.

This possibility is hampered by the absence of a straightforward correlation between the reconstructed consonant system of Proto-Upper Cross (either Dimmendaal's or Sterk's) and that arrived at here for Proto-Lower Cross, or between the reflexes of these systems in present day Upper and Lower Cross languages. There is no fortis/lenis opposition synchronically in any Lower Cross language; moreover, postulating a fortis/lenis opposition for Proto-Lower Cross is both unnecessary and unwarranted, as the following reconstruction shows.

3.2. *The nasal series*

The nasal consonants ***m**, ***n**, ***ɲ**, and ***ŋ** have all been reconstructed as initial consonants in Proto-Lower Cross. For ***m** and ***n**, this is relatively straightforward, as for both of these complete cognate series exist in the present-day languages, permitting the reconstruction of lexical items such as Proto-Lower Cross ***ma** 'like, love'; ***-mɔ́ŋ** 'water'; ***mɛ̀n** 'swallow'; and ***míŋá** 'flog, beat', and Proto-Lower Cross ***í-núà** 'mouth', ***ú-nàm** 'meat, animal', ***é-nɪ̀n / i-** 'elephant', and ***nɔ̀** 'give'. These reconstructions are supported not only by the comparative evidence from within the group, but also by evidence of cognate words from other Delta-Cross languages, for example Proto-Upper Cross ***mɛ̀ːdí** (S), ***mèn** (D) 'swallow', Proto-Ogoni ***mmau** 'water', Proto-Central Delta ***amʊːm** 'water'.[3]

At the palatal and velar places of articulation, we find complete cognate series of initial nasal or nasalized consonants. Though they are not as common as **/m/**, **/n/**, they do suggest the reconstruction of Proto-Lower Cross ***ɲ** and ***ŋ**. These have been undergoing change in the form of a reduction in degree of linguo-palatal contact in most Lower Cross languages, namely Efik, Etebi, Ibibio, Ibino, Ibuoro, Ilue, Iko, Ito, Itu, Nkari, Okobo, Okobo, Oro, Uda, Ukwa, and Usagahde. This reduction, or weakening, is a tendency which appears to be gradually spreading through the group, though farther advanced in some languages than in others. The reduction of Proto-Lower Cross ***ŋ > w̃** is also apparently further advanced, with respect to languages affected, than that of Proto-Lower Cross ***ɲ > j̃**, although in Iko, Nkari, and Oro the reverse is apparently true. This development is paralleled by similar changes among oral consonants, as is demonstrated below.

External evidence of the sort seen for ***m** and ***n** is not available to support the reconstruction of ***ɲ** and ***ŋ**. Cognate with Proto-Lower Cross ***ɲàm** 'sell', and ***é-ɲɛ̀n / a-** 'eye', in Proto-Upper Cross, ***jàmá** ('sell' or 'buy') and ***djènà** 'eye' are reconstructed, while in Proto-Ogoni, 'eye' is reconstructed as ***adidɛ̃ɛ̃.** Corresponding items are not available for Proto-Central Delta. For ***ŋ**, we find Proto-Upper Cross ***-gg^{w}à** (S) and ***gg^{w}â** (S) cognate with Proto-Lower Cross ***ŋ^{w}â** 'wife' and ***ŋ^{w}ɔ́ŋ** 'drink' respectively, and for Proto-Ogoni, ***ɔ-wā** (W) and ***wá** (W) have been reconstructed for 'wife' and 'drink'. (In all Lower Cross languages today, initial **/ŋ/** is realized as **[ŋ^{w}]** or **[w̃]**; the question of its phonemicization as ***ŋ**, rather than ***ŋ^{w}**, is discussed below.)

The possibility that the initial nasal is conditioned by the presence of a final nasal (that is, **/CVN/ → [NVN]**) must be considered, for as the examples above

3. Sources for reconstructed forms are as follows: Proto-Central Delta, Alex (1989); Proto-Ogoni, Ikoro (1989) (I) or Williamson (no date) (W); Proto-Upper Cross, Dimmendaal (1978) (D) and Sterk (no date) (S). Ikoro (1989) uses the term "Keggoid" for what has traditionally been called the Ogoni group, but more recently has adopted "Kegboid".

show, an initial nasal in Lower Cross also generally implies a nasal consonant stem finally. This is supported by evidence from cognates for 'sell', and 'eye', where there is a final nasal consonant in the Proto-Lower Cross reconstruction, and where we also see a final nasal, or at least nasality, present in other Delta-Cross languages, though not initially. For Proto-Lower Cross ***ɲ**, this possibility, however, is contradicted by the evidence of 'shake' ***ɲɛ̀k**, where there is no final nasal, and also by Proto-Lower Cross ***ɟɛ́m** 'want' or ***ó-ɟɛ́n** (plural ***é-ɟɛ́n**) 'child', where the initial ***ɟ** apparently did not become nasal in environments similar to those of 'sell' and 'eye'. Similarly, Proto-Lower Cross ***ù-bóm** 'boat', ***è-dèm** 'back', and ***ú-tóm** 'work', each of which is cognate across all or most of the languages in the group, argue against the possibility for ***m**, ***n**.

There is no corresponding evidence with respect to the reconstruction of Proto-Lower Cross ***ŋ**, in that only the two items given above, 'wife' and 'drink', allow for its reconstruction in initial position, and both of these do have a final nasal. Proto-Lower Cross ***g^{w}**, though, did occur in the environment of a following nasal consonant, as reconstructions for 'person' ***ó-g^{w}óm**, and 'life' ***ú-g^{w}ém**, show (the reconstruction of ***g^{w}** is discussed in section 3.9). It seems clear that **[ŋ^{w}]**, as it occurs today in Lower Cross languages, and as it occurred in Proto-Lower Cross, is ultimately a result of the regressive assimilation of nasality affecting ***g^{w}**. At present it is not clear at what stage this process was active; presumably it was pre-Lower Cross, though the cognate series for 'person' suggests it was active into the Lower Cross period.

Proto-Lower Cross ***[ŋ^{w}]**, however, was in complementary distribution with Proto-Lower Cross ***[ŋ]**, which occurred finally, and the decision to phonemicize Proto-Lower Cross ***[ŋ^{w}]** as ***ŋ** rests on the fact that this parallels the situation found in all Lower Cross languages today (there is no evidence to the contrary), and that this is the analysis normally adopted in Lower Cross studies (see, for example Cook 1969, 1985 for Efik, Essien 1990 for Ibibio, Faraclas 1984 for Obolo, and Kuperus 1978 for Oro).[4]

3.3. *Labials*

A voiceless labial stop **/p/** does not occur in initial position in most Lower Cross languages; in those which do have it, this consonant can be traced back to Proto-Lower Cross ***kp**. The only exception to this is Ibino, where it is a reflex of Proto-Lower Cross ***b.** Consequently, **/p/** has not been reconstructed for Proto-Lower Cross. Lexical items demonstrating Proto-Lower Cross ***b** include: ***ú-búkòd** 'head', ***ú-bɔ́k** 'arm', ***é-bá** 'breast', and ***bàd** 'count'. These are paralleled in other Delta-Cross branches by reconstructed forms such as Proto-

4. Evidence for this is given in Connell (1991a).

Upper Cross *`-**bɔ́k** (S) 'arm' and *`-**bɛ́i** (S) 'breast', Proto-Ogoni ***e-boi*** (I) 'arm' and ***ɔ-ba*** (I, W) 'breast', and Proto-Central Delta *'**baːl** 'count'. Proto-Lower Cross ***b*** contrasted with ***kp***, as is demonstrated by items such as Proto-Lower Cross ***é-kpád*** 'trunk of tree', and ***í-bád*** 'mud'.

All Lower Cross languages today have **[b]** (**/b/**), though there is also a variety of reflexes of Proto-Lower Cross ***b**. Most of the changes in evidence represent instances of reduction, with Proto-Lower Cross ***b** becoming **[β]**, **[w]**, or **[v]** (or a tapped stop, **[b̃]**). Exceptions to this are the change of Proto-Lower Cross ***b** to Ibino **/p/**, and the occasional change in Ebughu of ***b** > **[gb]** (for example 'goat', **égbó**).

The most regular development is that of Proto-Lower Cross ***b** > **/β/ / V_V** in Usaghade. Proto-Lower Cross ***b** has been retained in Usaghade when it occurs word-initially (for example in imperative verb forms), and following a syllabic nasal (**[m̩-]**), where the nasal has had the effect of stabilizing the following stop. A preceding syllabic nasal has had a similar effect in all Lower Cross languages that have shown a tendency to reduce Proto-Lower Cross ***b**; that is, sequences of **/mw/**, **/mv/**, **/mb̃/** and **/mβ/** are not found in Lower Cross. In Usaghade, this development has led to the establishment of **/β/** as a phoneme, as another development, Proto-Lower Cross ***kp** > **/b/** in Usaghade, has led to a contrast between the two. The two changes, Proto-Lower Cross ***b** > **/β/** and Proto-Lower Cross ***kp** > **/b/**, constitute a mini-chain shift in Usaghade, although the chronology of developments is not clear.

The reduction of Proto-Lower Cross ***b** has taken the same course in many of the languages, resulting in **[β]**, **[w]**, **[v]** as mentioned, or occasionally **[f]**. However, it is clear that for the most part these have been independent developments in the different languages, as usually it is different lexical items which are affected, though the mediating environment seems to have been the same, namely, generally intervocalic, and before rounded vowels for ***b** > **w**. Other than in Usaghade, only in Enwang and Uda has the change of Proto-Lower Cross ***b** (***b** > **/v/**) resulted in the introduction of a new contrast. Also only in these two lects has the set of lexical items affected been the same, though Ebughu's ***b** > **/w/** change parallels the Enwang and Uda development fairly closely in that there is an overlap in the sets of lexical items in which the two developments occur. The same can be said of ***b** > **/f/** in Oro, though to a lesser extent. In these languages, the development has resulted in a merger with existing phonemes, hence no new contrast has been introduced.

Ibino is the one language that goes against the general trend to weakening Proto-Lower Cross ***b**. Here, we find a development resulting in a change in voicing, rather than in stricture, that is, Proto-Lower Cross ***b** > **/p/**. While this change has not affected all available lexical items, it is reflective of a general tendency in the language to devoice initial obstruents, as will be seen below, and can be considered the final stage of this process.

Table 3. *Cognate series used in reconstructing Proto-Lower Cross* ***b**

	'head'	'arm'	'breast'	'count'
Anaang	**i-wòd**	**ó-bɔ́k**	**ɛ́-bá**	**bàd**
Ebughu	**ú-búRò/m-**	**ú-βɔ́k**	**é-bɛ́**	**bàt**
Efai	**i-búRò/m-**	**ú-bɔ́k**	**ɛ́-bɛ́**	**bàt**
Efik	**i-búòt**	**ú-bɔ́k**	**é-bá**	**bàt**
Ekit	**i-búRò**	**ú-bá?**	**ɛ́-bɛ́**	**bàd**
Enwang	**ú-búgù/mú-**	**ú-bɔ́k**	**é-bɛ́**	**bàt**
Etebi	**i-bóRò**	**ú-βá?**	**é-bé**	**bàt**
Ibibio	**i-wû:d/ŋ-**	**ú-bɔ́k**	**é-bá**	**bàt**
Ibino	**i-wò**	**ú-pɔ́k**	**ɛ́-pá**	**pàt**
Ibuoro	**i-búòt**	**ú-bɔ́k**	**é-bá**	**bàt**
Ilue	**i-wò**	**ó-bɔ́k**	**é-bá**	**bàt**
Iko	**ú-búRù**	**ú-bɔ́k**	**ɛ́-bíɛ́**	**bàt**
Ito	**i-bûd**	**ú-bɔ́k**	**é-bá**	**bàt**
ItuMbuso	**i-bôt**	**ú-bɔ́k**	**ɛ́-bá**	**bàt**
Nkari	**i-bôt**	**ú-bɔ́k**	**é-bá**	**bàt**
Obolo	**i-bòt**	**ú-bɔ́k**	**é-bɛ́**	**fûk**
Okobo	**ú-búgù**	**ú-bɔ́k**	**ɛ́-bá**	**bàt**
Oro	**ú-búgò/m-**	**ú-bɔ́k/ɔ-**	**é-bɛ́**	**bàt**
Uda	**ú-búRù**	**ú-bó?**	**ɛ́-bɛ́**	**bàt**
Ukwa	**i-búòt**	**ú-bɔ́k**	**é-bá**	**bàt**
Usakade	**ú-βô/m-**	**ú-βɔ́k/a-**	**é-βá/a-**	**bà (-sé)**
Proto-Lower Cross	***ú-búkòd/m-**	***ú-bɔ́k/a-**	***é-bá/a-**	***bàd**
Proto-Upper Cross	—	***`-bɔ́:k** (S) ***-bɔ́k** (D)	***`-bɛ́i** (S) ***-báy** (D)	—
Proto-Ogoni	***e-boi**	***ɔ-ba**	***mmĩmã**	—
Proto-Central-Delta	***ɛmʊ**	—	—	***ba:l**

The only contradictory development in Ibino is ***b** > **w**. This appears to be conditioned by the presence of following ***__u(C)V** in Proto-Lower Cross, as shown by Proto-Lower Cross ***ú-búkòd** > Ibino **íwò** 'head' where the intervocalic consonant was lost first, and by Proto-Lower Cross ***é-búá** > Ibino **éwá** 'dog'. It is not clear from the data available whether a **/b/ ~ /p/** contrast exists in Ibino.

There are two possibilities to account for the apparent lack of regularity in changes to Proto-Lower Cross ***b.** First, that the developments go in two directions, that is, those that may be referred to as weakening and those that may be seen as strengthening, could be taken as evidence of two phonemes rather than one at the Proto-Lower Cross level — conceivably the fortis/lenis opposition discussed earlier. This would suggest that the reduced articulations

now present are reflexes of one phoneme (presumably the lenis one), and the unreduced ones, that is, a full labial stop, are reflexes of the other, presumably a fortis, phoneme. For this to have much credibility, however, one would first of all like to see a substantial concurrence of reflexes across the group; except as mentioned, this is not the case. Second, one might expect to see a correspondence between **[p]** and **[b]** in Ibino and instances of weakening or retention of Proto-Lower Cross ***b** elsewhere in the group. Again, this is not in evidence. Finally, one would hope for a high degree of concurrence between developments in Lower Cross and the reconstructed systems of other Delta-Cross groups with regard to the fortis/lenis distinction. This also is not the case; Sterk (no date), for example, reconstructs Proto-Upper Cross ***-bèn** 'husband', which is cognate with Proto-Lower Cross ***è-béd**, but Proto-Upper Cross ***-bbʊ́d** 'goat', which is cognate with Proto-Lower Cross ***é-bód** (the doubled **bb** for Proto-Upper Cross represents fortis). Both the Lower Cross words show similar developments across the group, suggesting that if Sterk's reconstruction is accurate, then the fortis/lenis distinction disappeared pre-Lower Cross. The situation is in fact more complicated, in that not only are there discrepancies in this regard between the two existing reconstructions of Proto-Upper Cross (as mentioned above), but there are at least three reconstructed labial phonemes for Proto-Upper Cross which correspond to Proto-Lower Cross ***b**; Proto-Upper Cross ***b**, ***bb**, and ***p** (by Sterk's reconstruction). In addition, there is no apparently straightforward correspondence between Proto-Upper Cross ***pp** and ***p** on one hand, and Proto-Lower Cross ***f** and ***b** on the other (see below).

The second possibility to account for the apparent lack of regularity in the reduction of Proto-Lower Cross ***b**, is to look at this development from the perspective of lexical diffusion (Wang 1969; Chen and Wang 1975). The change of Proto-Lower Cross ***b** to **[w]**, as elsewhere, has affected different dialects of Anaang to varying degrees, suggesting that it is a change in its implementation stage, a "sound change in progress". The same can be said of the development of $*g^w$ > **[w]**, and it would be of interest to discover in Anaang what sort of interaction, if any, exists between the two developments. While more data is needed before a statement can be made with any confidence, certainly a quantitative study of this variation would prove revealing.

The incompleteness of the change of Proto-Lower Cross ***b** to Ibino **[p]**, can also be understood from the standpoint of lexical diffusion and fits in well with predictions based in phonetic theory (Ohala 1983). This predicts that the backmost obstruents should devoice first, as the trans-glottal pressure differential necessary to maintain voicing would be neutralized first for these, and then progressively towards the anterior of the vocal tract. This is apparently what has happened in Ibino; as evidence presented here shows, all initial Proto-Lower Cross voiced obstruents have devoiced in Ibino, such that this change is complete, other than at the labial place of articulation.

3.4. *The development of alveolar stops*

The voiceless stop ***t** is perhaps the most straightforward reconstruction of the Proto-Lower Cross system, having undergone little in the way of development as the group has diversified. It is exemplified by items such as Proto-Lower Cross ***ú-tɔ́ŋ** 'ear', ***é-tíé** 'tree', ***ú-tín** 'sun' and ***ú-tíkád** 'stone', and supported elsewhere in Delta-Cross by Proto-Upper Cross *** ˋ-tyɔ́ːŋ** (S) 'ear' and *** ˋ-tté** (S, D) 'tree', and Proto-Ogoni ***ɔ-tɔ̃** (I) 'ear' and ***e-te** (I) 'tree'. Its contrastiveness in Proto-Lower Cross is demonstrated by examples such as Proto-Lower Cross ***tèm** 'cook', ***è-dèm** 'back' and ***í-lém** 'body', and **táŋ** 'gather', ***-dàŋ** 'arrow', and ***-láŋ** 'louse'.

Changes that have occurred have involved voicing, palatalization, and possibly assimilation. For voicing, we find in Obolo occasional instances of Proto-Lower Cross ***t > /d/**, as in ***é-tíké > é-déké**, 'okra'. For the other two only isolated examples can be drawn, these again from Obolo, and it is not clear whether they can indeed be reconstructed to Proto-Lower Cross ***t**. We do note, however, that in most Lower Cross languages today at least slight, and sometimes substantial, palatalization or assimilation of **/t/** is common.

The voiced alveolar stop of Proto-Lower Cross, ***d**, is also a relatively straightforward reconstruction. Examples of this are Proto-Lower Cross ***é-dɛ̀d** 'tooth', ***ú-dìm** 'stream', ***ɛ́-dɔ̀ŋ** 'sheep' and ***dí** 'come'. Other than Proto-Ogoni ***a-daː** (I) 'tooth', no direct supporting evidence has been found to date outside Lower Cross, though likely cognates do exist. In Upper Cross these usually show a voiceless stop corresponding to Lower Cross ***d**.

The most important development of Proto-Lower Cross ***d** has involved a weakening or erosion of the stop articulation to a tap. The change of ***d > [ɾ]** is widespread phonetically in Lower Cross, but apparently only in Obolo and Anaang (in the Abak dialect) has the tap developed phonemic status alongside **/d/** (see Faraclas 1984: xvii–xviii for Obolo). In the Abak dialect of Anaang, the change has been general and unconditioned; the contrast with **/d/** is not the result of a split of Proto-Lower Cross ***d**, rather, the presence of **/d/** in this dialect is the result of a separate development, discussed below. In most other Lower Cross languages, this change has spread to varying degrees (that is, both **[d]** and **[ɾ]** currently exist as variants), again with no readily discernible environmental conditioning factor. The variation is possibly explained in terms of lexical diffusion theory, and again a quantitative study should shed more light on this matter. It is also conceivable that this represents a long standing variation in Lower Cross that has seen first one, then the other being the favored alternant, though we note that languages such as Ekit have no occurrence of **[ɾ]** in initial position, while at least one dialect of Anaang, as mentioned, appears to have completed the change. The further reflex **[ɹ]** in Uda and occasionally elsewhere, suggests that the process is not yet complete. The only other development of

Proto-Lower Cross ***d*** is the affrication observed in Obolo, for example Proto-Lower Cross ***é-dèd* > *ɛ́-dʒɛ́t*.**

The phonetic characteristics found for **/t/** and **/d/** in virtually all present-day Lower Cross languages (Connell 1991a) help to understand the different developments the two have undergone, and also give insight into what their phonetic nature must have been in the parent language. Electropalatography done with Ibibio and Anaang speakers (Connell 1991a, 1992) has shown that the articulation of **/t/** in both of these languages is very stable, and involves substantial linguo-palatal contact, which would help account for its diachronic stability where other Proto-Lower Cross obstruents have undergone greater change. It is therefore a reasonable conclusion that the articulation of Proto-Lower Cross ***t*** was essentially the same as that found in Lower Cross languages today. Since voicing can be assumed to have existed in Proto-Lower Cross ***d***, these two can be described as having shared a voicing opposition. On the other hand, the articulation of **/d/** (**[d]**) is considerably weaker in that it involves a less substantial and briefer contact, and therefore voicing would not have been the only important distinguishing characteristic. Hence, the possibility of these forming a fortis/lenis opposition comes to mind.

The likelihood of the Proto-Lower Cross ***t* ~ *d*** opposition being one of fortis versus lenis, reflecting the same opposition reconstructed for Proto-Upper Cross, however, can be discounted. Proto-Lower Cross ***t*** has been reconstructed in words where frequently fortis ***tt*** has been reconstructed in Proto-Upper Cross, for example 'tree', Proto-Lower Cross ***é-tíé*** and Proto-Upper Cross ***` -ttế*** (S, D), while other examples, such as 'ashes', Proto-Lower Cross ***ì-tóŋ***, Proto-Upper Cross ***-tóŋ***, and 'work', Proto-Lower Cross ***ú-tóm***, Proto-Upper Cross ***-tomo*** show a correspondence between Proto-Lower Cross ***t*** and Proto-Upper Cross ***t***. Evidence of this sort again suggests that if the fortis/lenis opposition existed in Delta-Cross, it was lost before the emergence of the Lower Cross languages. But the situation is not so straightforward as to suggest a simple merger of fortis and lenis stops pre-Lower Cross, as Proto-Upper Cross ***tt*** also corresponds to Proto-Lower Cross ***s*** and ***d***, and Proto-Upper Cross ***t*** to Proto-Lower Cross ***d*** (all of these using Dimmendaal's reconstructions; Sterk's reconstruction gives a different, but equally complicated, set of correlations). There is insufficient data available to me to draw comparisons with Central Delta or Ogoni.

3.5. *The* **/d/–/l/–/n/** *correspondence and Proto-Lower Cross* ***l***

In a number of Lower Cross languages **/l/** is also found, in contrasting with **/d/** but corresponding to **/d/** elsewhere in the group, or **/n/** in Usaghade. In all of these languages, the division of lexical items showing one or the other is clear cut and consistent; minor exceptions to this are found only in Ibino and Iko, where **/d/** may occur in words containing **/l/** in other languages, and in Ilue, where **/n/** is found rather than **/l/** in a couple of items. That is, unlike others of

the changes that have been examined (for example ***b > w**, ***d > r**), with only minor exceptions, it is consistently the same set of cognates, across languages, which contains **/l/**. The change, then, is not likely to be one that has arisen independently in the different languages. Either a split (***d > /d/, /l/**) or a merger (***l, *d > /d/**) has occurred (the situation in Usaghade is discussed below). However, there is no evidence of a conditioning environment that would have precipitated a split, so it is concluded that a merger has taken place. Items containing Proto-Lower Cross ***l** include Proto-Lower Cross ***ɛ́-lɛ́mɛ̀** 'tongue', ***í-láːb** 'sleep', ***lóm** 'bite', and ***lùkòb**, 'ten'. In reconstructions of Proto-Upper Cross, Proto-Ogoni, and Proto-Central Delta, ***l** has not been postulated in items cognate to those in Proto-Lower Cross. In each of these groups, however, cognate items containing **/l/** can be found in individual languages, suggesting, as discussed below, that its absence at the earlier level should be reconsidered.

The conclusion that a merger has occurred is given credence by the fact, that on independent grounds those languages retaining Proto-Lower Cross ***l** (namely Ebughu, Enwang, Ibino, Iko, Ilue, Obolo, Okobo, Oro, and Uda) do not appear to form a sub-group within Lower Cross, as would be implied if **/l/** were an innovation. On the other hand, those languages exhibiting the postulated merger (that is, Anaang, Efai, Efik, Ekit, Etebi, Ibibio, Ibuoro, Ito, ItuMbuso, Nkari, and Ukwa) for the most part do appear to be more closely related, both in terms of lexicostatistic comparisons (Connell and Maison, in press) and sound correspondences.[5] With regard to sound correspondences, there are at least two which coincide reasonably well with the **/d/ ~ /l/** divide, namely an **u-/i-** correspondence in prefixes, and the loss of medial ***k** word internally in a small, but generally consistent, set of words (see Connell 1991a).

Despite strong evidence for Proto-Lower Cross ***l**, the alternative of reconstructing the third participant in the **/d/–/l/–/n/** correspondence should also be discussed, though it is in fact a more difficult scenario to conjecture. In this case, it would first of all be necessary to explain the split that would have happened, that is, ***n > /n/, /d/** or ***n > /n/, /l/**, when again there is no obvious conditioning environment, and second, to explain why some languages of the group have **/d/** as a result of what would have been a denasalization process whereas others have **/l/**. Understanding ***l > /n/** is perhaps more straightforward in that, apart from phonetic similarities between the two, the **/n/** reflex can to some extent be seen as an areal or substratum phenomenon. That is, the dialect of Londo which forms a strong substratum in the history of Usaghade has no **/l/** (Connell, in press a); in addition, **/n/** apparently frequently occurs as a reflex of ***/L/** in many of the surrounding Grassfields, Ekoid, and Narrow Bantu languages (Miehe 1985).

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5. Efai is perhaps anomalous in this respect, in that geographically, at least, it is somewhat isolated from the rest of this central group. Certain oral traditions, at any rate, also support the notion that Efai has closer connections historically with the languages mentioned than it might have at present (Connell and Maison, in press).

Table 4. *Cognate series used in reconstructing Proto-Lower Cross* ***d***

	'body'	'enter'	'ten'	'tongue'	'sleep (N)'	'eat'	'bite'
Anaang	**í-dém**	**dɔ́k**	**dùòp**	**é-démè**	**í-dáp**	**díá**	**dóm**
Ebughu	**í-lé**	**lók**	**lùgò**	**é-léì**	**í-lé**	**líá**	**ló**
Efai	**í-dé?**	**dók**	**dùgù**	**é-dɔ̀ì**	**í-dé**	**díá**	**dó**
Efik	**í-dém**	**dók**	**dùòp**	**é-démè**	**í-dáp**	**díá**	**dóm**
Ekit	**í-dí**	**dó?**	**dùgò**	**é-dié**	**í-déɛ**	**díá**	**dú**
Enwang	**í-lé**	**lók**	**lùgù**	**é-dé-lèì**	**í-lé**	**líá**	**ló**
Etebi	**í-dí**	**dók**	**dùgu**	**é-dî**	**í-dé:**	**díá**	**dú**
Ibibio	**í-dém**	**dʌ́k**	**dùòp**	**é-démè**	**í-dáp**	**díá**	**dóm**
Ibino	**í-dé**	**lók**	**lùòp**	**é-lôm; é-dómò**	**í-lá:p**	**líá**	**lóm**
Ibuoro	**í-dém**	**dók**	**dùòp**	**é-démè**	**í-dáp**	**díá**	**dóm**
Iko	**í-dé**	**lók**	**lùòp**	**é-lôm**	**í-lá:p**	**líá**	**lóm**
Ilue	**ì-nì ówòm**	**lók**	**lògù**	**é-láì**	**í-lé**	**líé**	**ló**
Ito	**í-dém**	**dɔ́k**	**dùp**	**é-démè**	**í-dáp**	**díá**	**dím**
ItoMbuso	**í-dém**	**dúk**	**dùòp**	**é-démê**	**í-dáp**	**díá**	**dóm**
Nkari	**í-dém**	**dók**	**dùòp**	**é-démâ**		**díá**	**dóm**
Obolo	**á-kpá lé̱k**	**níŋ**	**àkɔ̀p**	**á-lɔ́m**	**í-lá:k**	**ɲíè**	**lóm**
Okobo	**í-lé**	**lók**	**lùgù**	**é-láì**	**í-lé?**	**líé**	**ló**
Oro	**í-lé**	**lók**	**lùwù**	**é-léì**	**í-lé**	**líé**	**ló**
Uda	**é-pə́d í-lè**	**lók**	**lùgù**	**é-léì**	**í-lé:**	**líá**	**ló**
Ukwa	**í-dém**	**dók**	**dùòp**	**é-dêm**	**í-dáp**	**díá**	**dóm**
Usakade	**ú-né̱m/n-**	**núká**	**nùòp**	**é-nêm/a-**	**í-náí/o-**	**níá**	**nóm**
Proto-Lower Cross	***í-lé̱m**	***lók**	***lùkòb**	***é-lé̱mè/a-**	***í-lá:b**	***líá**	***lóm**
Proto-Upper Cross	—	—	***djɔ̀:bi̱** (S) ***djòB** (D)	* **-mè̱dà** (S) * **-mèná** (D)	***-djámà** (S) **-dábí** (D)	***dî(a)** (S) ***djá**	***dúmá** (S) ***dómà** (D)
Proto-Ogoni	—	—	***Dòb** (W)	***adidɛ̄m** (I)	—	**de** (W)	**dãmĩ** (I)
Proto-Central Delta	—	—	***ɗioβ**	**ənem**	—	**ɗe**	—

The comparative data from other Delta-Cross languages can also be discussed in this connection, particularly in view of the fact that, as mentioned above, for these it has seemed more appropriate to reconstruct ***d**. In Upper Cross there is a wealth of reflexes (for example **[d, r, l, j]**), making the reconstruction difficult at best. In cases which are seemingly relatively straightforward, researchers have usually preferred to reconstruct ***d** on the grounds that first, it often is the more frequently occurring of the two, and second, that **/d/ > /l/** is seen as a weakening, and consequently phonetically more plausible, and therefore a more expected development.

The first of these grounds is inadequate as a basis for reconstruction - there is no *a priori* reason why "majority rule" should be a principle governing phonological reconstruction. In the second case, granted that "weakening" changes appear to be far more common than "strengthening" changes, this should not be taken uncritically to imply that they are phonetically more plausible; phonetic plausibility presumably is determined by phonetic factors alone, and not the frequency with which a particular phenomenon is manifested (but cf. Pagliuca and Mowrey 1987). More to the point at hand, it is by no means clear that a change of ***[d] > [l]** is in fact "weakening"; whether or not this is the case would presumably depend on the specific articulatory characteristics of **[d]** and **[l]** in the languages in question.[6]

Returning to the reconstruction in hand, it may also be worthwhile bringing to bear evidence from further afield. Certainly among the Bantu languages, words cognate to those reconstructed with Proto-Lower Cross ***l** can be found with **/l/** in some cases, and **/d/** in others. Traditionally, Bantuists have reconstructed proto-Bantu ***d** in these cases, (for example Guthrie 1967–1971), or a fortis/lenis distinction, but it is clear Bantu reconstruction needs rethinking in more than just this regard (cf. Hedinger 1987; Stewart 1989; Blanchon 1991; Janssens 1991; Teil-Dautry 1991; Stewart 1993). Further afield still, one finds in various languages more distantly related, cognate words containing **/l/**. I take as examples words from Samba Leeko, an Adamawa language spoken in the Mambila region of the Nigeria-Cameroun borderland; the Samba Leeko data are from Noss (1976): 'louse' Proto-Lower Cross ***láŋ**, Samba Leeko **láágá**; 'bite' Proto-Lower Cross ***lóm**, Samba Leeko **lum-**; 'eat' Proto-Lower Cross ***lía**, Samba Leeko **líí-**. Indeed, one could go even further yet, as in the Kordofanian languages (data from Greenberg 1963) we also find 'bite' **/lami/**, 'eat' **/le/**, and

6. Palatography reveals considerable variation as to the amount of linguo-palatal contact involved in the production of these consonants; it is not inconceivable that **[l]** could involve greater contact than **[d]** in a given language, thereby making it the stronger of the two (assuming, not unreasonably, that degree of contact is an acceptable correlate of "strength"). Recall also (section 3.4) that, in general, **/d/** in Lower Cross languages is relatively weakly articulated, such that it involves a similar degree of contact to what has been found for **/l/** in a wide range of languages.

'buy' **/la/** (this latter presumably cognate with Proto-Lower Cross ***lép**). From evidence of this sort, it is arguable that Proto-Lower Cross ***l** goes back to a very ancient period. This indicates that **/l/** may indeed be a relatively stable consonant, a suggestion supported by the relatively frequent occurrence of **/l/** in languages of the world (Maddieson 1984; Stevens and Keyser 1989).

3.6. *Palatals*

A single palatal stop, ***ɟ** has been reconstructed for Proto-Lower Cross. There are a number of reflexes across the group, giving a correspondence set **[ɟ – dʑ – dʒ – tʃ – z – ɟ – j]**) indicating a Proto-Lower Cross phoneme articulated in the palatal zone; however, determining its phonetic realization is problematic.

Throughout most Lower Cross languages, the normal realization of this phoneme is **[ɟ]** or **[j]**, though in some, **[dʒ]** or **[dʑ]**, and occasionally **[ʝ]** (this latter appears most prevalent in Anaang). For speakers normally having **[ɟ]** or **[j]**, speech styles exist — for example excited or emphatic speech — where a voiced affricate or voiced palatal stop is often realized. It has been argued (Pagliuca and Mowrey 1987: 459) that this type of synchronic variation may be indicative of fortition diachronically, and therefore may suggest that **[ɟ]** or **[j]** could be reconstructed, as Proto-Lower Cross ***j**. This reconstruction would also be favored by those who accept a simple "majority rule" principle. However, there is no *a priori* reason why the innovation, rather than the retention, should appear in the less casual speech styles, and such evidence could equally well reflect a lenition process, with the historically older form turning up in the exceptional styles.

The existence of **[tʃ]** in Ibino provides solid evidence as to what is the most appropriate reconstruction. It has already been shown that Ibino has devoiced initial obstruents — for example Proto-Lower Cross ***b** > Ibino **/p/** (Proto-Lower Cross ***g^{w}** > Ibino **/k^{w}/** is discussed below). The occurrence of **/tʃ/** in Ibino parallels that of **/p/** and **/k^{w}/** — that is, with voiced and often reduced or weakened articulations elsewhere in the group corresponding to the voiceless Ibino obstruents. In these two instances, there was no evidence to support reconstructing the voiceless phoneme, and this lends additional evidence to the proposal here; that is, that the devoicing process in Ibino has affected not just individual phonemes, but rather all initial voiced obstruents, though at differing rates of change determined partly according to place of articulation. The existence of **[ʝ]**, then, albeit relatively infrequent among Lower Cross languages today, leads to a reconstruction, of Proto-Lower Cross ***ɟ**. This reconstruction allows us to adhere to the expected lenition process in the majority of Lower Cross languages, except with regard to the devoicing in

Ibino, as this is frequently considered to be a strengthening process.[7]

Given these arguments, Proto-Lower Cross ***ɟ** is the preferred solution, allowing the reconstruction of lexical items such as Proto-Lower Cross ***é-ɟák** 'fish', ***ɟìb** 'steal', ***ɟɔ́k** 'be full', and ***ɔ́-ɟɛ́n** 'child'. One last point may be taken into consideration. Similar developments can be seen in the neighboring and related Ogoni languages (that is, a **[z ~ dʒ ~ j]** correspondence), which suggests that either these languages are undergoing developments similar to those in Lower Cross, or that perhaps the variation seen in both groups is in fact quite old. That is, the variation may have existed not only in Proto-Lower Cross, but perhaps even in Proto-Delta-Cross as well, though ***ɟìb** (I) 'steal' has been reconstructed for Proto-Ogoni.

It may seem counter-intuitive from a phonetic perspective to reconstruct a lone voiced stop in this relatively posterior articulatory zone (see, for example, Ohala 1983), and for reasons of pattern symmetry one may wish to reconstruct a voiceless counterpart. There is some evidence that ***c** could also be reconstructed for Proto-Lower Cross. This evidence is ambiguous at best, and an alternative solution, at least pending an appropriate reconstruction of Proto-Lower Cross vowels, has been adopted. This is discussed in the following section however, in closing this section, I note that Maddieson (1984: 37) observes a statistical tendency for lone voiced stops in this articulatory region similar to that frequently observed for the labial place of articulation.

3.7. *Voiceless velar stops*

There is some evidence for reconstructing a system of voiced and voiceless velars, labialized velars and labial-velars. This would imply that the situation as it currently exists in Obolo reflects that of the parent language. However, this evidence for a voicing contrast is weak at best. For simple velars, there is little convincing evidence for reconstructing other than a voiceless velar stop in Proto-Lower Cross, and this is what is postulated here (labialized and labial-velars are discussed below).

Proto-Lower Cross ***k** is an uncontroversial reconstruction; several complete sets of cognates exist across the group which can be exemplified by Proto-Lower Cross, ***ú-kód** 'leg', ***ú-kɔ́d** 'bush, farm', ***kédé** 'think', and ***ú-káŋ** 'fire'. At least three of these are supported by evidence of cognates from Upper Cross, with ***ˋ-kkátí** (S) 'leg', ***ˋ-kɔ́t** (S) 'bush', ***kkétté** (S), 'think', and the fourth, 'fire', is also plausibly cognate with Proto-Upper Cross *** ˋ-kʷɔ́ːn** (S).

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7. This assumption regarding processes of voicing and devoicing, though, is a debatable one; at least on phonetic grounds there seems to be no *a priori* reason why devoicing should be seen as strengthening; moreover, it is reasonable that processes of "strengthening" and "weakening" should be compared only along the same parameter — presumably degree of stricture.

Table 5. *Cognate series to illustrate the reconstruction of Proto-Lower Cross* ***k***

	'leg'	'bush/farm'	'think'	'heart'	'walk'
Anaang	**ú-kót**	**i-kɔ́t**	**kɛ́rɛ́**	**é-dʒìt**	**sàŋá**
Ebughu	**ú-kúó**	**ú-kɔ́**	**krɛ́**	**á-sìt**	**sàŋá**
Efai	**ú-kúó**	**i-kɔ́**	**kɛ́rɛ́**	**é-sìt**	**sàŋá**
Efik	**ú-kót**	**í-kɔ́t**	**kɛ́rɛ́**	**é-sìt**	**sàŋá**
Ekit	**ú-kóᵘ**	**i-kɔ́?**	**kə́rɛ́**	**ɛ́-sìt**	**sàũ̀ŋá**
Enwang	**ú-kú**	**ú-kɔ́**	**kə́rɛ́**	**á-sìt**	**sàŋá**
Etebi	**ú-kó?**	**i-kɔ́?**	**krɛ́**	**é-sìt**	**sàŋá**
Ibibio	**ú-kót**	**i-kɔ́t**	**kɛ́rɛ́**	**é-sît**	**sàŋá**
Ibino	**ú-kót**	**i-kɔ́t**	**kɛ́ɹɛ́**	**ɛ́-kìt**	**sàŋá**
Ibuoro	**ú-kót**	**i-kɔ́t**	**kɛ́rɛ́**	**ɛ́-sìt**	**sàŋá**
Ilue	**ú-kót**	**i-kɔ́t**	**kɛ́rɛ́**	**ɔ́-cíɛ̀t**	**sàŋá**
Iko	**ú-kú**	**ú-kɔ́**	**ké**	**é-kìt**	**sàŋá**
Ito	**ú-kót**	**i-kɔ́t**	**kɛ́rɛ́**	**é-sît**	**sàŋá**
ItuMbuso	**ú-kót**	**i-kɔ́t**	**kɛ́rɛ́**	**é-cît**	**sàŋá**
Nkari	**ú-kót**	**i-kɔ́t**	**kɛ́rɛ́**	**é-sît**	**sàũ̀ŋá**
Obolo	**ú-kót**	**ú-kɔ́**	**kɛ́ːk**	**ɛ́-dʑ̀ît**	**(dʑ̀ɛ̀)**
Okobo	**ú-kú**	**ú-kɔ́**	**kə́rɛ́**	**á-ʧ̀ît**	**sàŋá**
Oro	**ú-kú/o-**	**ú-kɔ́**	**kídɛ́**	**ó-kìt**	**sàŋá**
Uda	**ú-kú**	**ú-kɔ́**	**kɛ́rɛ́**	**á-sìt**	**sàŋá**
Ukwa	**ú-kót**	**i-kɔ́t**	**kɛ́rɛ́**	**é-sìt**	**sàŋá**
Usakade	**ú-kó/a**	**ú-kɔ́**	**kɛ́rɛ́-dá**	**(è-bùmá/a-)**	**sàŋá**
Proto-Lower Cross	***ú-kót/a-**	***ú-kɔ́t**	***kɛdɛ**	***é-kit/a-**	***sàŋá**
Proto-Upper Cross	***`-kkáti (S)**	***`-kɔ́t (S)** ***-kɔ́D (D)**	***kkétté (S)** ***kéDí (D)**	—	***kkɛ̀ŋá (S)** ***kkàŋá (D)**
Proto-Ogoni	—	—	—	—	***cãã**

Where the reconstruction may be more debatable is in the treatment of correspondence sets showing a range of reflexes; **[k, g, c, ʧ, dʒ, s]** occur in cognate series across the group for items such as 'insult' 'guest', 'one', and 'heart'. The evidence for Proto-Lower Cross ***ɟ** in the previous section suggested the desirability, on grounds of pattern symmetry and possibly phonetic plausibility, of also reconstructing Proto-Lower Cross ***c**. Though I have noted above that pattern symmetry is not to be considered an important motivating factor in sound change, this correspondence set could quite conceivably be reflexes of a voiceless palatal stop.

However, with one exception, these appear to reconstruct in a non-low, front vowel environment, the prime conditioning environment for palatalizing processes. This one exception is 'insult' which has, in most Lower Cross languages, the root **/-sɔ́ŋ/** corresponding to **/-ʧɔ́ŋ/** in Anaang, Ibino, Iko, Obolo, Okobo, and Usaghade, suggesting Proto-Lower Cross ***-cɔ́ŋ**. Only Ilue and ItuMbuso, both showing **/-kíɔ́ŋ/ [cjɔ́ŋ]**, provide a clue that Proto-Lower Cross had ***-kíɔ́ŋ (*[cjɔ́ŋ])** rather than ***-cɔ́ŋ**. In considering this, though, if one were

to reconstruct ***c**, it would leave evidence of ***k** having occurred only in back or low vowel contexts. So while there may be some indication that Proto-Lower Cross ***c** could be reconstructed in a variety of environments (that is, possibly before both front and back vowels), the evidence is not strong, and its implications for the distribution of ***k** are unacceptable. The preferred analysis, then, is that ***k** had a palatal allophone before non-low front vowels, which has undergone affrication or assimilation in most of the group. The velar articulation has been retained primarily in Ibino, Iko, Ilue, ItuMbuso, and Oro. Its retention may plausibly be tied into developments in the vowel systems of these languages, in that the following vowel in all of these but ItuMbuso is no longer high front **[i]**, but has become lowered and centralized **[ɪ]**. In other words, what was Proto-Lower Cross ***[ciC]**, ***kiC**, has become **[kɪC]**, **/kiC/**, in this subset of the group.

Correspondences between **[k]** and **[g]** or **[k]** and **[k^w]**, which exist mainly between Obolo and the rest of the group, point to the possibility of reconstructing Proto-Lower Cross ***k^w**, and ***g**. Both Obolo and Ibino have **/k^w/**, though not in corresponding items. In Ibino most, if not all, instances of **/k^w/** are reflexes of Proto-Lower Cross ***g^w**, as is shown below. In Obolo, **/k^w/** apparently has a variety of sources. Some instances appear to be reflexes of Proto-Lower Cross ***kp** (see below), and others may be a result of borrowing, though there are no unequivocal instances of this.[8] Yet others, however, appear to result from independent developments within Obolo, and can be seen as a result of phonological restructuring. Several items have been reconstructed for Proto-Lower Cross showing a sequence ***-ku-**, for example ***ɔ́-kúɔ́k** 'bee', ***ú-kúàk** 'metal', ***í-kúɔ́** 'music, song', and ***ì-kùɔ̀d** 'toad'. In some languages of the group, this is usually pronounced **[ku]**, while in others, **[k^w]** is the norm (perhaps all show **[-ku-]** in careful speech). This is suggestive as to how this development has proceeded in Obolo, that is, by the gradual reduction of vowel clusters, leaving the labialization of the following vowel associated with the consonant (cf. Kelly 1991 on glide formation in Swahili).

The existence of voiced velar stops in Obolo and other Lower Cross languages also cannot be taken uncritically as evidence for Proto-Lower Cross ***g**, but neither should the possibility be ignored. First, while there is some correspondence between occurrences of **[g]** in Oro and Ebughu, a similar correspondence does not exist between these and Obolo. Occurrences of **[g]** in Ebughu and Oro seem most clearly to be a result of an increasing tendency to voicing, and words said in isolation are more apt to be pronounced with voiceless obstruents than words in connected speech. This may also be true of Obolo, but in Obolo it is often difficult to establish with any certainty cognates elsewhere in Lower Cross

8. That is, there are lexical items in this set that have no apparent cognates elsewhere in Lower Cross (or Delta-Cross) but for which the donor language, if they are indeed borrowings, has yet to be determined.

for words containing **/g/**. There is, therefore, no strong evidence for reconstructing Proto-Lower Cross ***g**, though it is possible that more data would prompt a re-evaluation of this conclusion.

3.8. *Labial-velar stops*

The voiceless labial-velar stop **/kp/** is reconstructable for Proto-Lower Cross, though it has undergone a number of developments. In several of the languages, ***kp** has lost its velar element, that is, in Anaang (the Ikot Ekpene dialect), Ebughu, Enwang, ItuMbuso (partially), Nkari, Okobo, and Uda (partially) ***kp** > **/p/**; in Usaghade ***kp** > **/b/**. In Obolo, developments appear to be variable across dialects, with Proto-Lower Cross ***kp** in some items having gone to **/gb/**, and in others, to **/k^{w}/**, though the directionality in both cases is somewhat uncertain.

In most of those languages where Proto-Lower Cross ***kp** has evolved into a simple labial articulation, the change has affected all instances of Proto-Lower Cross ***kp**; in traditional terms, an unconditioned change. However, in Uda and ItuMbuso the change has not affected all items. Indeed, for one of my informants from ItuMbuso, pronunciation of individual words was variable between **[kp]** and **[p]**, while for the other (the older of the two), only **[kp]** was used. For both of these languages a survey from the point of view of propagation of sound change (that is, lexical diffusion) would prove interesting.

In Usaghade, **/kp/** is found in opposition to **/b/**, with both corresponding to **/kp/** elsewhere in the group. In the absence of an apparent conditioning environment that might have precipitated a split, a reasonable hypothesis here would suggest that this is evidence for two phonemes in the parent language, possibly ***kp** and ***gb**. If there were correspondences to be found between **/gb/** in Obolo and **/b/** in Usaghade, the evidence for postulating Usaghade **/b/** as a reflex of Proto-Lower Cross ***gb** would be strong indeed. There is, however, none. Another possibility for Usaghade, the one which is preferred here, is that those words in Usaghade which contain **/kp/** have been borrowed into the language subsequent to the change of Proto-Lower Cross ***kp** to Usaghade **/b/**. This is supported by the fact that all nouns containing **/kp/** in Usaghade come in the **o-/i-** gender in the language's noun classification system (Connell 1987), which appears to be the gender into which borrowings are most likely to be grouped. Such a development is made more plausible by the fact that most speakers of Usaghade also speak Efik, which would have been the "donor" language. Another alternative to account for the co-occurrence of Usaghade **/kp/** and **/b/** is that this could be seen as an arrested development — the change of Proto-Lower Cross ***kp** to **/b/** may have been halted mid-stream perhaps as a result of increased contact between Efik and Usaghade (see Connell and Maison, in press, for related discussion).

The existence of both **/kp/** and **/gb/** in Obolo corresponding to **/kp/** elsewhere could, at first glance, suggest the possibility of an earlier voicing opposition, as discussed above. However, apart from the lack of correspondence between members of the opposition in Obolo and in Usaghade, only very few of the lexical items in Obolo containing **/gb/** have cognate forms elsewhere in Lower Cross; the rest are possibly borrowings from neighboring non-Lower Cross languages (for example **ógbó** 'curse' which is not cognate with known Lower Cross forms, though if it is borrowed, it is not known from where). On the other hand, many more cognates between Obolo and the rest of the group exist for **/kp/**. It is conceivable, then, that **/gb/** in Obolo is to a large extent a borrowed sound (Obolo is subject to much greater contact with non-Lower Cross languages than most of the others). But, as was the case for **/g/**, it is possible that more data would lead to different conclusions.

In Obolo, Proto-Lower Cross ***kp** has been maintained most consistently in the environment of low vowels. When followed by the high vowels **[i, u]**, a change to **[k^{w}]** seems to be spreading, though differentially according to dialect: for example Ikuru **íkpí**, but Asarama **ík^{w}í** 'rat' (Proto-Lower Cross ***é-kpí**, Proto-Upper Cross ***-kkpí**), but Ikuru **ík^{w}ilá:k**, Asarama **ŋḿ-kpílá:k** 'bed'. Here, the presence of the nasal prefix may have served to stabilize the labial-velar. One other possible example is Obolo **k^{w}éŋ** 'teach/learn' (Proto-Lower Cross ***kpé:p**), assuming this is cognate.[9] If so, the latter of these suggests the development is spreading beyond the **[i, u]** environment.

Positing the opposite direction of change, that is, Proto-Lower Cross (or Obolo) ***k^{w}** > Obolo **/kp/** would be in keeping with proposals for developments of labial-velars elsewhere (for example Ponelis 1974; Ladefoged et al. 1976; Williamson and Ohiri-Aniche, forthcoming.) However, as we have seen, there is little other evidence for reconstructing ***k^{w}**, and the fact that a **/k^{w}/ > /kp/** development has been proposed elsewhere, does not of course constitute evidence for its occurrence here. We may note in addition, that for instances of **/k^{w}/** in Obolo corresponding to **/kp/** elsewhere in Lower Cross, one also frequently finds **/kp/** in Upper Cross in cognate words, and reconstructable to Proto-Upper Cross (though occasionally **/k^{w}/** is reconstructed).

We may look briefly, then, at evidence from outside the immediate Lower Cross group, from its near neighbors. In at least some languages in each of the other three Delta-Cross groups, a voicing opposition for labial-velars can be found synchronically, and one has been reconstructed for Proto-Ogoni (Kegboid) (Ikoro 1989; Williamson, no date), for Proto-Upper Cross (Sterk, no date; Dimmendaal 1978), and for Central Delta (Alex 1989). Nowhere in the data available to me is there convincing evidence to point to an early merger of this

9. Obolo **kwéŋ** is a likely cognate with **-kpép** elsewhere in Lower Cross, as we also find other instances correspondences between final velars and final labials.

opposition in Lower Cross; rather, the evidence points more to the conclusion that occurrences of **/gb/** synchronically in Lower Cross, whether in Obolo or in Ebughu (section 3.3 and section 3.9), are the result of secondary developments.

Finally, the range of reflexes found for Proto-Lower Cross ***kp**, together with the phonetic characteristics of **/kp/** as it occurs synchronically in the group allows for comment on the possible phonetic nature of Proto-Lower Cross ***kp**. Essentially, it can be argued this stop must have had a realization similar to what obtains in the group today, in particular as in Ibibio. The existence of an asynchrony in the timing of the two articulations, with the labial release occurring later would account for the prevalence of simple labials among the reflexes, while a voiced release would account for the change to **[b]** in Usaghade. Possible variation across emerging Lower Cross dialects with regard to the extent of voicing prior to the release, similar to the variation currently found in Ibibio, would account for the existence of both **[p]** and **[b]** as reflexes of Proto-Lower Cross ***kp**. (Further details may be found in Connell 1991a, 1991b, in press b.)

3.9. *Labialized velar stops*

Arguments have been presented above against reconstructing ***k^{w}*** for Proto-Lower Cross. It is possible, though, to reconstruct a voiced labialized velar stop, Proto-Lower Cross ***g^{w}***. Its contrastiveness is illustrated by sets such as Proto-Lower Cross ***g^{w}ɔ̀k*** 'swim', ***kɔ̀k*** 'grind', ***í-kpɔ́k*** 'bark of tree' and ***é-bɔ̀k*** 'monkey'. For the most part, Proto-Lower Cross ***g^{w}*** has either been retained, or has eroded to **/w/.** In Ibino, however, ***g^{w}*** has devoiced regularly to become **/k^{w}/** (only one counter-example to this development exists in my data), and in line with the general trend to devoicing of stem-initial obstruents in Ibino. In Ebughu, the consonant has remained voiced, but the labial articulation has strengthened, resulting in **[gb]** in certain items, for example **gɓɛ̀** 'paddle' (Proto-Lower Cross ***g^{w}àd***), **[b]** in others, for example **bɔ́** 'show' (Proto-Lower Cross ***g^{w}ɔ́t***) while remaining **[g^{w}]**, for example **g^{w}ɔ̀k** 'swim', or going to **[w]**, for example **wàk** 'scratch' (Proto-Lower Cross ***g^{w}àk***) in others. This again may be a case of a change spreading through the lexicon gradually, as there is no readily apparent conditioning factor governing the variation. Only one cognate item from elsewhere in Delta-Cross is available to me, Proto-Upper Cross ***g^{w}ɔ̀k*** (D) 'swim'.

It was mentioned above (section 3.2) that **[g^{w}]** was nasalized in stems containing a nasal consonant, and that this process likely occurred pre-Lower Cross. There is some evidence, though, to question whether this nasalization process was complete by the time of the break-up of Proto-Lower Cross. In the cognate series for 'person' we find evidence that the process was still underway after the splintering of the group, in the forms found, for example in Anaang

ág^{w}ó, Ekit **áŋ^{w}é**, and Usaghade **ɔ́wɔ́m**, as well as in Obolo in a number of compounds, such as 'guest' **ògʷò ítʃɛ̀n**, and 'doctor' **ògʷò áfíà**). Therefore, we find the process attested in various states — retention of the final nasal without having caused nasalization of **/g^{w}/** (ItuMbuso and Usaghade, though with subsequent loss of the velar closure), loss of the final nasal without having brought on nasalization of **/g^{w}/** (Anaang; also Efik, Ibibio, Ibuoro, and Ukwa, and again with subsequent loss of the velar closure), and nasalization of **/g^{w}/** and subsequent loss of the final nasal in the others. Although the reconstruction of Proto-Lower Cross ***ó-g^{w}óm** for 'person' is reasonable, it should be pointed out that there are no other items that demonstrate an exactly parallel set of developments across the group. This of course does not call into question the reconstruction of Proto-Lower Cross ***g^{w}**; the other examples given provide ample evidence for its existence.

4. Fricatives

4.1. *Labials*

All Lower Cross languages have at least two fricatives, **/f/** and **/s/**, both of which are relatively straightforward to reconstruct to Proto-Lower Cross. Only in Obolo has Proto-Lower Cross ***f** undergone regular change, where ***f > /w/** in most environments; for example 'house' Proto-Lower Cross ***ú-fɔ̀k**, Obolo **úwù**; 'forget' Proto-Lower Cross ***fɛ̀dɛ́**, Obolo **wùrû** (cf. also 'want' — Obolo **wɛ̌k**, Ibino, Iko **fɛ́t**). Proto-Lower Cross ***f** has also undergone change involving palatalization in Obolo when followed by a high front vowel: 'moon', Obolo **ɔ́-ɲáŋ**, Proto-Lower Cross ***ɔ́-fíɔŋ**; 'rub', Obolo **ʧíɔ́k**, Proto-Lower Cross ***fiɔ́ŋɔ́**; and 'firewood', Obolo **íjé**, Proto-Lower Cross ***í-fíá**. A change of labial to palatal or alveolar is reasonably well attested in languages of the world, and Ohala (1978, 1989) has provided phonetically-based reasons for change of this nature.

The only other development of Proto-Lower Cross ***f** to note is the voicing that tends to occur in Ebughu and Oro, and particularly in casual speech. As discussed elsewhere, this occurs with a number of obstruents in these two languages.

Comparison of Proto-Lower Cross forms with those from the related Delta-Cross groups shows that Proto-Lower Cross ***f** probably comes from an earlier voiceless labial stop. Only a few cognates can be found corresponding to words in Lower Cross containing **/f/**, such as 'jump', Proto-Lower Cross ***fɔ̀dɔ́**, Proto-Upper Cross ***pé**, Proto-Ogoni ***pɛgi**, and Central Delta (Abua, etc.) **-pɛl,** as well as Proto-Lower Cross ***í-fíá**, Proto-Central Delta ***ìpɛ̀** 'firewood'. Further afield, we find Mbum **pàk**, 'house', apparently cognate with Lower Cross **úfɔ̀k**. (See Hino 1978; Mbum is an Adamawa language, situated in Northern Cameroon.

Other labial correspondences between Lower Cross and Mbum suggest that this is not mere coincidence.)[10]

Other labial fricatives which exist currently in Lower Cross are **/β/** (in Usaghade), and **/v/** (Ebughu, Enwang, and Uda). These have been shown above to be reflexes of Proto-Lower Cross ***b**.

4.2. *Alveolar*

There is strong evidence for Proto-Lower Cross ***s.** Except for Usaghade, where the form is not cognate, Proto-Lower Cross ***ú-sèn** 'day' has a reflex with **/s/** in each of the present day languages of the group; the same can be said for Proto-Lower Cross ***ú-sùŋ**, '(house)fly' with the exception of Obolo. For 'walk', Proto-Lower Cross ***sàŋá** has been reconstructed, with a complete cognate series across the group demonstrating **/s/** with the exception of Obolo **/dʒè/**. Assuming this is cognate, it is not clear whether the affricate should be taken as evidence of a palatal origin for Lower Cross **/s/.**

When data from elsewhere in Delta-Cross are also taken into consideration, forms for 'walk' in particular, but also those for 'fly', some insight into the provenance of Proto-Lower Cross ***s** is gained. Here we find a correspondence between **/s/** in Lower Cross, a voiceless palatal (or front velar) in Ogoni, and what both Sterk (no date) and Dimmendaal (1978) have reconstructed as a fortis velar in Upper Cross, which would indicate it has come from an earlier Proto-Delta-Cross ***k** or ***kk**. Inspection of Sterk's Upper Cross data, however, suggests reconstructing palatal is also plausible. This, then, would point to a palatal in pre-Lower Cross; the existence of Obolo **dʒè** 'walk', indicates this palatal survived into the early Proto-Lower Cross period. (Obolo **à-náńdʒìŋ** 'housefly' is more likely cognate with Anaang **ú-dʒíp** than **-sùŋ**. Further possible evidence for this comes from 'ground', Proto-Lower Cross ***í-sɔ̀ŋ**, which may be cognate with Proto-Upper Cross ***kkèk** as reconstructed by Sterk (it is not clear whether **ítʃɔ̀ŋ**, as is found dialectally in Anaang should be seen as an innovation or a reflex of an earlier pronunciation).

5. Approximants

5.1. */j/ and /w/ in initial position*

The question now arises as to whether any approximants can also be reconstructed as occurring in initial position in Proto-Lower Cross. Proto-Lower Cross ***l**,

10. This indicates that Proto-Lower Cross ***úfɔ̀k** may be an old root, though it is unattested in any other Delta-Cross group.

of course, has already been reconstructed and discussed, but we note that in virtually all present-day Lower Cross languages both **/j/** and **/w/** are found. Having reconstructed Proto-Lower Cross ***j̱*** rather than ***j**, there is no evidence for a contrast in initial position between the palatal stop and a palatal approximant, as all instances of **/j/** appear to be reflexes of Proto-Lower Cross ***j̱***.

Similarly, there is little evidence in the comparative data to suggest that **/w/** was present in the parent language as a stem-initial phoneme. It has been shown that instances of **/w/** current in Lower Cross are reflexes of Proto-Lower Cross ***g^{w}***, ***b**, or ***f**, and it does not seem possible, based on the data available, that it can also be reconstructed as a separate phoneme.

There is, however, reason to consider whether **/j/** and **/w/** occurred in other positions in Proto-Lower Cross, such as postconsonantally and finally, as arguments can be presented in favor of this sort of distribution for many of the Lower Cross languages today (cf. Cook 1969, 1985 for Efik and Kuperus 1978 for Oro). Resolution of this issue is intimately related to the development of the Proto-Lower Cross vowel system, and will not be discussed here.

6. Implications for sub-grouping within Lower Cross

Examination of sound correspondences is traditionally considered to be the most reliable means of classifying, or sub-grouping languages. The discussion in section 3.5 suggested the **/d/ – /l/ – /n/** correspondence to be indicative of a subgrouping within Lower Cross; I have elsewhere referred to this subgroup as Central Lower Cross. As this proposal is somewhat at odds with previous subgroupings claimed for Lower Cross (for example Forde and Jones 1951, adopted by Cook 1985), it would be remiss not to offer some discussion of this issue here. (It should be pointed out that these earlier groupings were largely impressionistic and to a certain extent geographical, rather than being based on systematic comparative work.)

The languages merging Proto-Lower Cross ***l*** with ***d**, were seen above to have innovated, apparently at a common period in their history. That the implied grouping of Anaang, Efai, Efik, Ekit, Etebi, Ibibio, Ibuoro, Ito, ItuMbuso, Nkari, and Ukwa) is supported by the fact that within this group there is a high degree of mutual intelligibility, and generally higher cognacy rates than those that obtain for the rest of the group.

The next most significant consonantal development is that of Proto-Lower Cross ***k**, which has gone to **/s/**, **/tʃ/**, **/dʒ/**, or remained as **/k/**, depending on the language, before high front vowels. This development cuts across the subgrouping established above, though without readily suggesting an alternative. (Ibino, Iko, Ilue, ItuMbuso, and Oro have retained ***k*** in this environment.) It is possible that this process was already in progress at the time of the break-up of Proto-Lower Cross; however, it will be noted that such a development is well

attested in languages throughout the world, and has a transparent physiological basis. It is appropriate, then, to see this as an independent development in the various languages affected.

While the same conclusion must apparently be reached regarding the developments of Proto-Lower Cross ***kp**, the situation is considerably more complex. Changes of ***kp** to **/p/**, **/b/**, **/gb/**, or **/k^{w}/** (or the retention of ***kp**) again cut across the boundaries suggested above, but without offering a more attractive alternative. In Anaang, the change is in one dialect, and within that dialect, more or less complete. (That is, ***kp** has apparently ceased to exist in this dialect; it is perhaps being re-introduced in the speech of some younger speakers through the influence of Efik, Ibibio, and other Anaang dialects.) In Ebughu, Enwang, and Okobo, the change is also complete. In Uda and Usaghade, ***kp** is continued alongside the present day reflexes, **/p/** and **/b/**, respectively, though in Uda there is some evidence that this is a change in progress, while in Usaghade the development seems to have run its course. These reflexes occur in different lexical items in the two languages, and so no connection between the two (that is, no period of common development) is postulated.

It is possible to suggest a sub-group consisting of Ebughu, Enwang, and Okobo on this evidence which would not contradict the **/d/ – /l/ – /n/** criterion; however, it would be desirable to include Uda as well, since a limited set of items in both Enwang and Uda demonstrate ***b > /v/**, which suggests a time of common development for these two, separate from the others. It seems contradictory that Proto-Lower Cross ***kp > /p/**, which would have to have preceded ***b > /v/** for the grouping including Okobo and Enwang to be valid, would not be complete in Uda. The proposal that Ebughu, Enwang, Okobo, and Uda form a sub-group is rejected, then, in favour of a smaller group consisting of Enwang and Uda. Accepting this, the change of ***kp > /p/** may be viewed as an areal phenomenon.

The ***b > /w/** change attested in many of the Lower Cross languages does not provide any substantial evidence of a sub-grouping, particularly as the lexical items affected vary from language to language. Rather, it appears to reflect a general tendency of consonant lenition in Lower Cross. Finally, other attested changes serve only to reinforce the autonomy of individual languages, for example, ***f > /w/** in Obolo, ***b > /β/** in Usaghade, and ***b** to **/p/** in Ibino are changes confined only to those languages.

The comparative evidence, then, suggests only one strong subgroup within Lower Cross, Central Lower Cross with the only other possibility being a minor group of Enwang and Uda. This leaves the rest of Lower Cross languages presumably as independent off-shoots of the parent language. For both Obolo and Usaghade this is obviously the case, as each is sufficiently different from the rest of the group. For the remaining languages, the characteristics they share (which are not inconsiderable) are assumed to be retentions from Proto-Lower Cross, or possibly a result of more recent developments involving dialect

contact. Further evidence could be marshalled in favour of this conclusion, but as this evidence is essentially non-linguistic (for example oral traditions) it is reported elsewhere (Connell and Maison, in press).

7. Conclusions: Implications for reconstruction beyond Lower Cross

The reconstruction of the Proto-Lower Cross consonant system presented here also has implications that reflect on the other branches of Delta-Cross, and indeed well beyond. Perhaps the most apparent of these is the suggestion that a reconsideration of the reconstruction of Proto-Upper Cross must be undertaken. The lack of systematic correlation among reconstructions and their reflexes in the consonant systems found in Upper and Lower Cross leads us to this conclusion, which is supported independently by the differing solutions reached by Dimmendaal (1978) and Sterk (no date) in reconstructing Proto-Upper Cross.

A second and related question concerns the reconstruction of a fortis/lenis distinction. In Lower Cross today there is no such contrast, whether it be attributed to a phonetic correlate of length or any other proposed phonetic feature. It seems reasonable to think that were one to approach Upper Cross with a view to doing a phonetically informed reconstruction of its consonant system, that is, to consider a synchronic length distinction as just that, rather than as a fortis/lenis opposition, a more satisfactory solution might be reached and the contradictions between Dimmendaal (1978) and Sterk (no date) resolved. It is conceivable that a length opposition would be reconstructable for Proto-Upper Cross, however it also seems possible that what has been seen as a fortis/lenis opposition among voiceless velars might be revealed to have been a palatal/velar opposition. A second factor in the Lower Cross reconstruction which lead us away from reconstructing a fortis/lenis opposition was the recognition that an important aspect of sound change is its propagation. Changes spread gradually through the lexicon, a situation which can lead to apparent double (or more) reflexes; this kind of evidence in the past has often been perhaps erroneously interpreted as evidence for more than one phoneme in the parent language, where viewing the variety of reflexes as evidence for a change in progress or an arrested development might be a more appropriate solution.

Finally, the supporting evidence adduced in the reconstruction of Proto-Lower Cross ***l** is interesting in view of the checkered history of this consonant in Benue-Congo studies (cf. Miehe 1985). Its reconstruction here together with its occurrence further afield, as well as typological considerations, suggests that it should perhaps be more widely reconstructed.

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