Recurrent Sound Correspondences of Akan and Yoruba and their Significance for Proto-Benue-Kwa (East Volta-Congo) C1 Reconstruction

by

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Abstract

This thesis will address the implications of lexical cognates and regular sound correspondences in the basic vocabulary of Akan (Twi) and Yoruba. Reconstruction, a central focus of comparative linguistics, is based upon determining regular sound correspondences between two languages that are already presumed to be related. By applying the comparative method and implicational laws of sound change to data derived from the first and second Swadesh Lists, the phonological inventory of the proto-language, Proto-Benue-Kwa (East Volta-Congo), from which Akan (Twi) and Yoruba are descended, will be juxtaposed with current reconstructions, primarily as pertaining to the initial consonant (C1). These recurrent phonological correspondences will serve to bring us closer to a true reconstruction of Proto-Benue-Kwa (East Volta-Congo) in essentially the same way as "Proto-Germanic-Latin-Greek-Sanskrit" served the pioneers of linguistic reconstruction as a pilot Proto-Indo-European. This thesis will add to the discourse of comparative and historical linguistics in the African milieu by testing current reconstructions and engaging current methodological and theoretical debates in African linguistics. This thesis culminates in the establishment of the Proto-Benue-Kwa Push Chain and the establishment of a clear phonetic environment for Proto-Benue-Kwa labial-velars vis-à-vis the labialized velars. The primary contribution to knowledge is in a refinement of current proposals of the phonological inventory as pertains to the C1 of the common pre-dialectal mother tongue (Proto-Benue-Kwa) from which both Akan (Twi) and Yoruba are descended based on analyzed data.

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Chapter 1

1.1.1. Introduction

This thesis begins with a statement of the problem. This is essentially a succinct delineation of controversies in the field of African comparative linguistics and the methodologies and reconstruction strategies from which these controversies originate. This section gives the two dominant perspectives on the issue of reconstruction, focusing in on how the ongoing debate relates to the current state of the discourse of Proto-Benue-Kwa (East Volta-Congo) reconstruction. Particular attention is given to the reconstructions of John M. Stewart as the primary comparative linguist to attempt a reconstruction of a proto-language dating back further than Proto-Bantu which was reconstructed by Malcolm Guthrie (1967-71) and built upon by subsequent scholars. The main reason why Stewart's work is focused upon is due to methodology. As opposed to the work of other comparative linguists such as Greenberg, Mukarovsky and Westermann, Stewart bases his work on an application of the comparative method. In his application of the comparative method, Stewart has centralized his research on an in-depth comparison between Akan, the Kwa languages being his area of specialization, and Bantu, relying primarily on the work of Guthrie. The problem to be addressed in this thesis is then defined in terms of possible methodological shortcomings in Stewart's work that may be corrected by bringing other daughter languages into the analysis of data that may yield a more complete picture of Proto-Benue-Kwa.

The thesis statement is centered on the idea that bringing data from the Yoruba language into the picture may bring clarity and help us to interrogate and

possibly refine current reconstruction proposals. This is due to the fact that Yoruba has retained sounds lost to Akan and Bantu, particularly the labial-velars.

The significance of this research is subsequently presented as making a contribution to current reconstructions in the ultimate pursuit of broadening knowledge and getting a more detailed picture of the proto-languages from which the contemporary languages of Africa are descended.

The literature review chapter is aimed at providing the reader with a survey of the comparative linguistics discourse in the African context. This section covers the history of the discourse up to some of the most current literature in the area of classification, phonetics/phonology, comparative and historical linguistics, and linguistic reconstruction with particular reference to the proto-language in question, Proto-Benue-Kwa. Some of the foremost names in these areas such as Kay Williamson, John Stewart, Paul Newman, Hans Mukarovsky, Peter Ladefoged, and Hans Henrich Hock have been drawn upon to give the reader a broad picture of the current state of comparative linguistics and closely related topics in theory and practice. This section brings the reader up to date with a survey of relevant journal articles and books written in the past few years while providing a background of the work upon which new developments and methodologies are based.

Chapter three is dedicated to elucidating the theoretical framework upon which this thesis is based. This chapter primarily relies on the work of Hans Henrich Hock in his explanation of the finer points of comparative linguistics from a theoretical and methodological perspective. This chapter familiarizes the reader with the concepts and the theoretical framework adopted in this thesis and used by historical and comparative linguists throughout the world. Particular attention is given to the role of

the comparative method because Stewart's use of the comparative method is the primary reason why his work has been used as a point of reference in this thesis over that of other comparative linguists.

Chapter four on research methods and methodology describes the comparative method as well as implicational laws and laws of sound change. It is on the basis of the comparative method and plausible hypotheses of sound change that the comparative data between Akan and Yoruba have been collected and organized. This has included the identification of recurrent and systematic sound correspondences in the basic vocabulary of Akan and Yoruba. This data is then analyzed and discussed including phonologically expressed diachronic rules of sound change from Proto-Benue-Kwa to daughter languages Akan and Yoruba.

Chapter five brings the thesis to a close incorporating a summary of conclusions drawn in each chapter as well as the results of this preliminary study in relation to this study's significance in the reconstruction and classification of Proto-Benue-Kwa. Further elaboration of work that is still yet to be done is also included in this chapter.

1.1.2. Statement of the Problem

While John M. Stewart's reconstructions represent the most current and certainly valuable Proto-Benue-Kwa (East Volta-Congo) reconstruction, this reconstruction is ultimately lacking in the preciseness necessary to fully reconstruct a Proto-Benue-Kwa proto-language that achieves full coverage (Stewart 2002).

The issue at hand is one that Stewart himself aptly describes in that his proposition of reconstruction based solely upon Akan and Bantu is "currently the only one on the table." Stewart affirms his "Proto-Potou-Akanic-Bantu is the only true protolanguage on offer that is ancestral to Proto-Bantu" asserting that,

> Mukarovsky, like Westermann before him, provides starred forms, and the unwary have often mistaken these for true reconstructions arrived at by the comparative method […] Mukarovsky himself accurately characterizes Westermann's starred forms, as "pseudo-reconstructions of Proto-Western Sudanic" (vol. 1: 36) and, to his credit, refrains from claiming that the status of his own Proto-Western Nigritic starred forms is any different (Stewart 2002: 201).

To elaborate, "pseudo-reconstructions differ from true reconstructions in that it is not possible to derive from them, by a specific set of diachronic rules, their putative reflexes in the daughter languages" (201). In light of this information, if we are to follow in the line of the scholarship of those historical and comparative linguists who have adhered to the rigors of the comparative method in our considerations, the field of reconstruction proposals is significantly narrowed. Although comparative linguists have built upon on the scholarship of predecessors who have utilized such techniques as mass comparison, the point remains that Stewart's reconstructions do represent the only proto-language proposal ancestral to Proto-Bantu that is based upon an application of the comparative method. This is why it is necessary to actively engage and build upon Stewart's work comparing Akan and Common Bantu. In doing

so, several pertinent questions arise. To what extent do his reconstructions of his "Proto-Potou-Akanic-Bantu," which, based upon current classificatory models is coterminous with Proto-Benue-Kwa, take into account other daughter languages that also have Proto-Benue-Kwa as the lowest intermediate node? What revisions, if any, will need to be made after other daughter languages are brought into the picture? These are the questions that this thesis will address.

Building upon the most current research in the field of linguistic reconstruction, support for the current reconstruction proposition or suggestions for a revised reconstruction of Proto-Benue-Kwa will be made. Conclusions will be drawn based upon the current study of Akan and Yoruba as juxtaposed with data from Bantu as analyzed by Guthrie and subsequently in Stewart's comparative analysis between Akan and Bantu. In this thesis, then, the three branches descended from Proto-Benue-Kwa will be represented in form of Akan (Kwa), Yoruba (West Benue-Congo) and Proto-Bantu/Common Bantu (East Benue-Congo).

In summation, a systematic analysis of recurrent sound correspondences between Akan and Yoruba utilizing the comparative method will lead to a revision or confirmation of current models of reconstruction. By expanding the current state of the discourse this analysis will advance us one step closer towards a more accurate and comprehensive reconstruction of Proto-Benue-Kwa (East Volta-Congo). This research will build upon research to date that has focused primarily on regular and systematic sound correspondences between Akan and Common Bantu.

1.1.3. Significance of Research

To date, the discourse of linguistic reconstruction has been approached from two disparate methodologies. The technique of mass comparison as introduced by Greenberg and followed also by Westermann and Mukarovsky is one such methodology wherein many languages are compared and a composite reconstruction based on all languages surveyed is posited. Others, such as Stewart, have limited data to essentially two languages or a small closely related group of languages invoking the comparative method. By applying the comparative method, correspondences and laws of sound change are meticulously examined in reconstruction.

Critiques of Stewart's application of the comparative method in particular, have asserted that, "an isolated comparison of ... [Akanic] with Proto-Bantu cannot be admitted" (Mukarovsky 1976-77, vol. 1: 166). This is the same sentiment later echoed by Williamson and Blench (2000: 13-14) in an oblique reference to Stewart's work:

> It is [...] not possible to initiate the process of reconstruction until large numbers of probably cognate lexical items are available to compare, and until a subgrouping hypothesis exists to ensure that all parts of the phylum are properly represented.

The views expounded upon by Williamson and Blench (2000) therefore seem to approve of mass comparison as opposed to the comparative method. Such critiques stem from the propensity towards methods of mass comparison, such as that employed by Greenberg (1955) in his original work on African language classification and Mukarovsky (1976-77) in his Proto-Western-Nigritic reconstructions.

In mass comparison, one simply finds look-alike words without establishing recurrent and systematic sound correspondences across languages investigated as demanded by the rigors of the comparative method. According to Paul Newman (2000: 262) the description of mass comparison given above is exactly and precisely the technique expounded by Greenberg (1955) and other proponents of mass comparison. According to Newman (2000: 262) there are several possible pitfalls in the application of mass comparison. The first is that in depending on vocabulary one runs the risk of assuming cognancy between similar words when the real explanation is borrowing. The second is that due to the fact that one is analyzing look-alikes rather than words that have been determined to be cognates on the basis of regular phonological correspondences, there is no guarantee that the similarities are of genuine significance and not simply attributable to chance. Three aspects of the mass comparison methodology are designed to account for these inherent shortcomings to some degree or another with the first two being methodological characteristics shared both by mass comparison and the comparative method. Firstly, vocabulary compared is limited to basic vocabulary such as body parts, primary colors, essential verbs and lower numerals in addition to closed lexical class items. The reasoning behind limiting vocabulary compared is based upon experience that has shown that borrowing is relatively uncommon in these aspects of the lexicon. Secondly, the comparative linguist takes a considerable amount of words into account rather than simply trying to establish cognancy based on individual word pairs. This second consideration is useful in the process of language classification, which, as opposed to reconstruction, was the central concern of Greenberg, Westermann, Mukarovsky and other early proponents of mass comparison. The

reasoning behind this second idea is that if one finds a good number of phonologically similar items, this justifies classifying them together but not necessarily reconstructing a proto-language based upon these pairs as any such reconstruction would merely yield pseudo-reconstructions (Newman 2000: 262-3). According to Stewart (2002: 201):

> Pseudo-reconstructions differ from true reconstructions in that it is not possible to derive from them, by a specified set of diachronic rules, their putative reflexes in the daughter languages [as would be required by the comparative method in showing regular sound correspondences].

Thirdly, in mass comparison one attempts to look at a number of languages at the same time to help in recognizing patterns and identifying cognates that are not readily evident. This third idea harkens back to Williamson and Blench (who also focus on classification rather than reconstruction) who are cited above claiming that it is not possible to initiate the process of reconstruction until all parts of the phylum are properly represented. This decree focuses on sheer volume of languages rather than taking a critical look at what is being done with the number of languages compared. While this may be helpful in classificatory issues it is not necessarily the most adept way of dealing with language reconstruction and determinations of cognancy.

Conversely, in the comparative method, the comparative linguist might demonstrate how whenever an unvoiced alveolar stop, **t**, occurs as the initial consonant (C1) in a language X, an unvoiced alveolar fricative, **s**, occurs as the C1 in a related language Y. In mass comparison however, such details as sound correspondences and the environments in which they occur are largely neglected. In the work of Greenberg and others who adopt the methodology of mass comparison, as delineated above, sound correspondences are invariably neglected as “In this method, there is no requirement that regular sound correspondences have been

established by the Comparative Method […], only that words look alike" (Newman 2000: 262). The advantage of the comparative method as a methodological tool lies in the detail that its application brings to the fore in determinations of cognancy and in the subsequent development of reconstructions that might otherwise be obscured by lexical items that on the surface appear dissimilar.

An advantage of mass comparison, however, lies in the fact that this method "determines relatedness, that is classifies languages into families, by the comparison of similar looking vocabulary items" (262). According to Williamson and Blench (2000) in their "History of Niger-Congo Classification" determining language classification is exactly what Greenberg, Westermann and Mukarovsky were attempting to do (Williamson and Blench 2000: 14-15). Therefore the mass comparison is an adequate tool in accomplishing the objective for which it is designed (classification and determination of relatedness) while the comparative method, which is not essentially a classificatory tool, is adequate in accomplishing the goals for which it is designed (establishment of regular sound correspondences, cognancy and proto-language reconstruction).

Questions of time depth have also been part and parcel of critiques of Stewart's research given the enormous, linguistically speaking, time and spatial depth between Akan and Bantu. Such critiques are not wholly unfounded and one sees that within Stewart's methodology, there are indeed limitations. These are limitations that beg the question of how can reconstruction, based upon two albeit diverse daughter languages, be expected to provide full coverage for all daughter languages without a representative sample of all daughter languages concerned. Although such pilot reconstructions cannot be expected to achieve full coverage, such pilot-proto-

languages can be systematically refined as more languages are brought to bear until we have the clearest picture of the proto-languages in question. Such is, in the final analysis, the functional definition of “pilot” in pilot-proto-language.

This is the reason why this comparison including Yoruba as a middle ground of sorts between previously analyzed Akan and Bantu is significant and timely. This research represents the next logical step in the dialogue that will refine or discard and prove or disprove the current reconstructions and classifications in the discourse of African comparative linguistics in general and that of Proto-Benue-Kwa in particular. The current study will test accepted ideas and offer new ones, helping the discourse to come closer to reaching its ends as pertains to the development of a reconstruction that will attain the elusive goal of full coverage by strategically bringing more daughter languages into the picture and using the comparative method to identify recurrent sound correspondences.

Chapter 2

2.1.1. Literature Review

According to Williamson and Blench's linguistic family tree of the Niger-Congo Phylum, as depicted in Figures 1.1 and 1.2, the lowest intermediate node shared by Akan and Yoruba in the phylum is Proto-Benue-Kwa (also known as East Volta-Congo). Therefore, recurrent sound correspondences found in cognate basic lexical items of Akan and Yoruba must be traceable to Proto-Benue-Kwa at the very least and perhaps even further into antiquity. These recurrent sound correspondences may be used to elucidate the nature of the phonological inventory of Proto-Benue-Kwa with particular reference to the C1.

This paper follows the line of thinking of Stewart (2002: 197-99), that in order to develop a pilot proto-language ancestral to that of Guthrie's authoritative reconstruction of Proto-Bantu (now commonly referred to as Narrow Bantu), there is the need to,

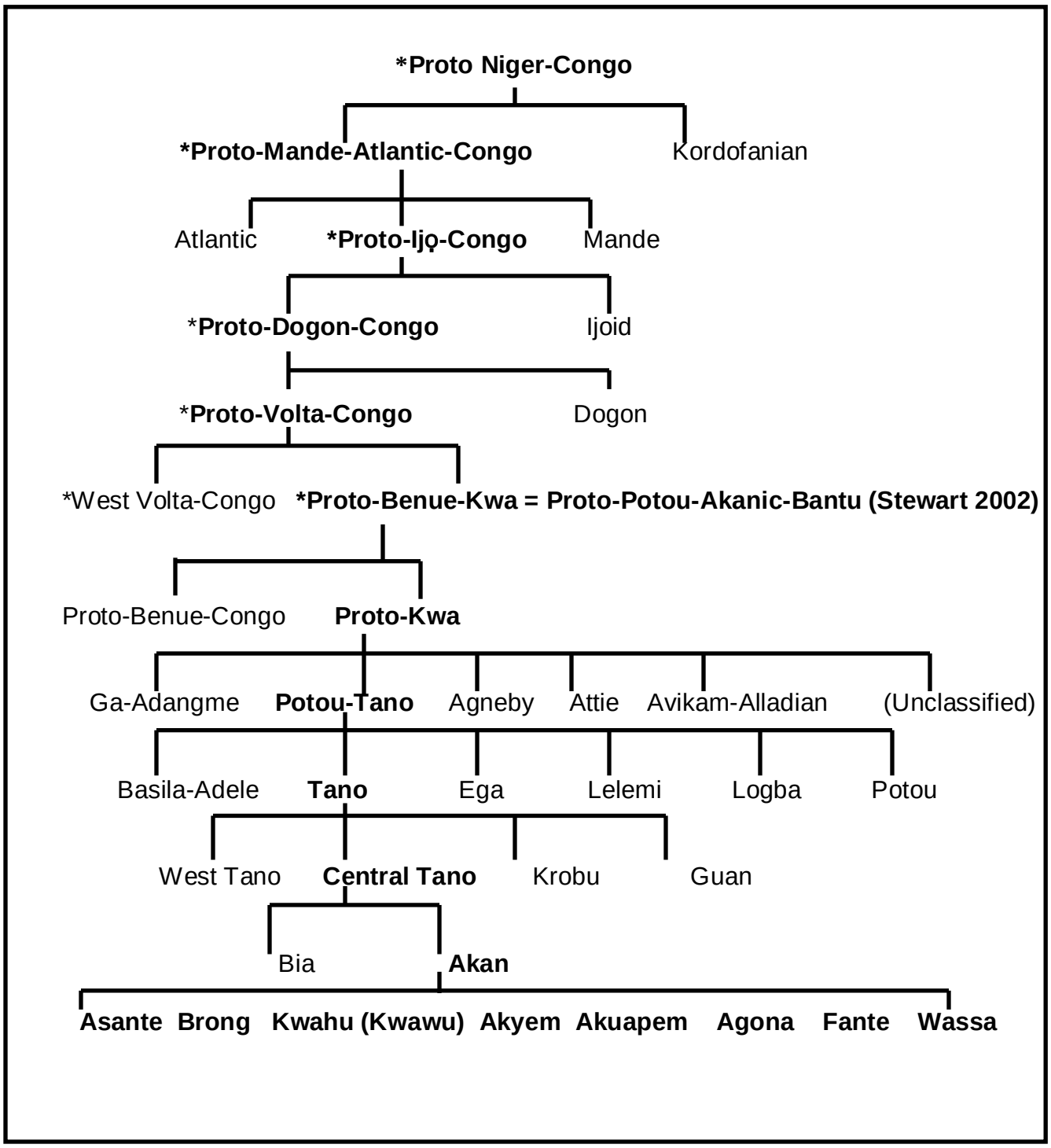
> [...] discredit the demonstrably unwarranted belief that reconstruction must be based from the outset on a representative sample of all the daughter languages [...] The valid premise is that the ultimate goal of reconstruction is a proto-language that takes proper account of all the daughter languages, and the invalid inference is that the reconstruction must be based from the outset on a representative sample of all the daughter languages.

In the case of Indo-European, for example, total coverage has been achieved. However, the pioneers of Indo-European reconstruction concentrated only on the languages that they knew best and the related languages of antiquity that were best documented, namely, Germanic, Greek, Latin and Sanskrit. The most crucial development to the reconstruction process was the establishment of the Germanic

consonant shift (Grimm's law). Recognition of the Germanic consonant shift as a reality subsequently led to an understanding of common innovations of the Germanic group. This discovery, which proved the usefulness of the comparative method, ultimately led to the reconstruction of Proto-Germanic by establishing a pattern of regular and systematic sound changes from Indo-European to which the Germanic sub-phylum adhered. Proto-Germanic was then able to stand shoulder-to-shoulder with Greek, Latin and Sanskrit as principles of natural sound changes and sound correspondences were revealed leading to the reconstruction of Indo-European.

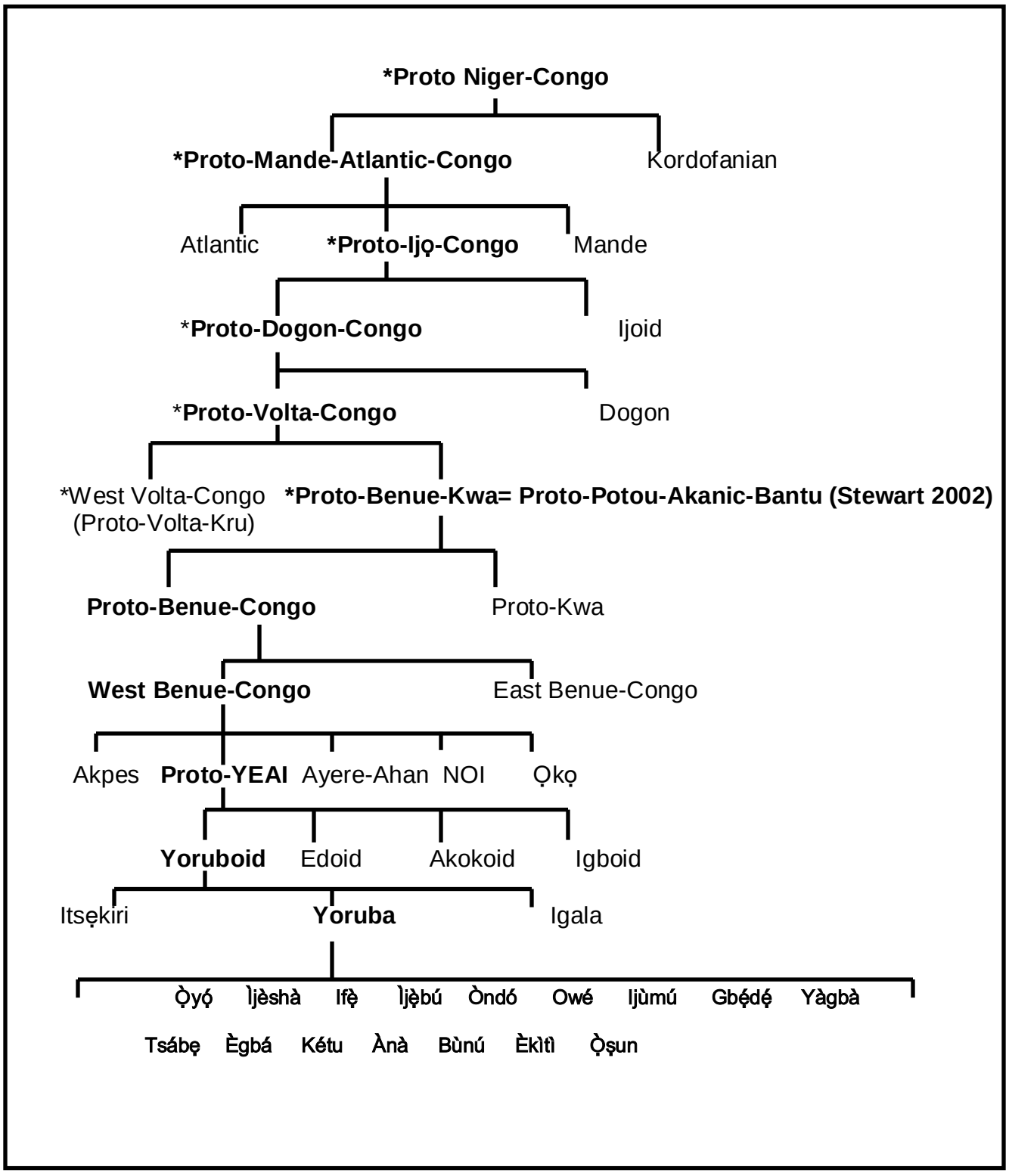
The significance of this history lies in the fact that the application of the comparative method to Akan and Yoruba, both of which occupy strategic positions as dominant languages in their geographic regions, has potential for yielding impressive results in the reconstruction of Proto-Benue-Kwa (East Volta-Congo) in juxtaposition with Stewart's comparison of Akan and Bantu. Proto-Benue-Kwa can then serve to advance the discourse to the threshold of full-scale Proto-Niger-Congo reconstruction, a major goal of the field of African comparative linguistics. As historically dominant languages, Akan and Yoruba have borrowed less externally, especially in reference to basic vocabulary, than other groups of languages in the Niger-Congo family (Stewart 2002: 205). This fact enables the comparative linguist the opportunity to compare data that one can be fairly certain has been inherited largely unchanged from the coordinate proto-language, Proto-Benue-Kwa as appears below in Figures 1.1 and 1.2:

Figure 1.1: Akan Genetic Classification



(Adapted from Williamson and Blench 2000)

Figure 1.2: Yoruba Genetic Classification



(Adapted from Williamson and Blench 2000)

Stewart's proposal of Proto-Benue-Kwa departs from the more traditional classification posited by Williamson and Blench (2000). In Stewart's (2002) article entitled "The potential of Proto-Potou-Akanic-Bantu as a pilot Proto-Niger-Congo, and the reconstructions updated", he openly challenges Williamson and Blench's classificatory model worth quoting in full:

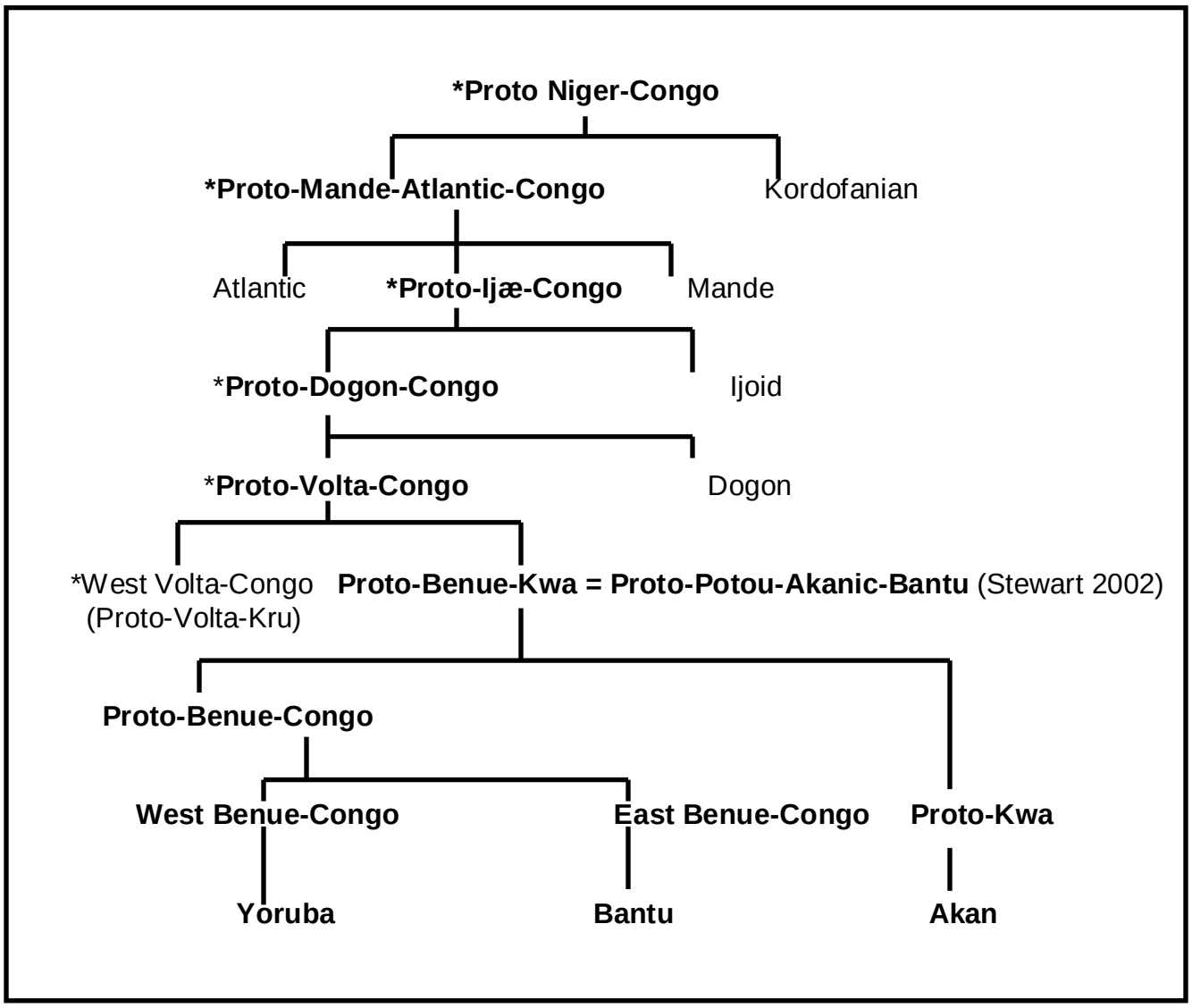
> In fact although Greenberg (1963), who does not recognize Potou-Akanic, has two intermediate nodes between his Niger-Congo and his Akan (my Akanic), namly Kwa and Western Kwa, and Williamson and Blench (2000) have six between their Niger-Congo and their Potou-Tano (my Potou-Akanic), Mande-Atlantic-Congo, Ijo-Congo, Dogon-Congo, Volta-Congo, South Volta-Congo (Benue-Kwa), and (New) Kwa (Greenberg's) Western Kwa), I know of no phonological innovations that would support any of them. Moreover, the only intermediate node posited both by Greenberg and by Williamson and Blench, namely Western Kwa/(New) Kwa, which is the lowest of the intermediate nodes in each case, is demonstratively indefensible as a genetic entity (Stewart 2001a, 2001c).

Although Stewart launches broad criticisms concerning Williamson and Blench's (2000) classificatory model, he fails to provide an alternative model. Essentially, while detracting from Williamson and Blench's (2000) identification of intermediate nodes, he does not provide either a written or graphic representation of proto-language classification based on "defensible genetic entities" that might replace it. Lacking such a comprehensive alternative proposal, Stewart proposes Proto-Potou-Akanic-Bantu named after the languages utilized in his comparative analysis as a pilot-Proto-Niger-Congo. Stewart's Proto-Potou-Akanic-Bantu is certainly coordinate with some accepted proto-language referent whether this is Proto-Niger-Congo or Proto-Benue-Kwa. However, lacking just such a comprehensive alternative genetic classification it is not possible to assume, based on Stewart's broad criticisms, that his comparative analysis and reconstructions are ultimately coordinate with Proto-Niger-Congo without some means of comprehensively representing this as fact. Therefore,

Williamson and Blench's model remains the most recent, comprehensive and scholarly model on the table.

In this thesis it was ascertained that based on Williamson and Blench's classification, the node at which Akanic and Bantu (and Yoruba) were last a single genetic entity was at the intermediate node Proto-Benue-Kwa. Therefore Stewart's (2002) reconstructions are viewed as consisting of representative components of this Proto-Benue-Kwa node, namely Akan and Bantu. Although Stewart refers to this lowest intermediate node at which Akan and Bantu were a single genetic entity by its parts, Proto-Potou-Akanic-Bantu, in this thesis, it will be referred to as Proto-Benue-Kwa. Following Williamson and Blench's current schema of classificatory representation, Akan is viewed as being representative of their Proto-Kwa while Bantu and Yoruba are taken to be representative of East-Benue-Congo and West-Benue-Congo, respectively. This schema is shown in the following graphic representation:

Figure 1.3: Components Proto-Potou-Akanic-Bantu/Benue-Kwa[1]



Some of the most ambitious attempts at reconstructions of phonological inventories ancestral to Proto-Bantu in the last three decades have been those of

[1] No intermediate nodes lower than Proto-Kwa, West-Benue-Congo and East-Benue-Congo are represented in this abridged figure. As evident in Figure 1.1 the Potou in Stewart's Proto-Potou-Akanic Bantu is derived from the split between the Potou languages and the Tano languages of which Akanic is a part. Although only Akanic and Bantu are analyzed in Stewart's (2002) work, the inclusion of Potou in the proto-language name is because of his hypothesis that Potou has maintained an implosive/plain distinction that he ascribes to his Proto-Potou-Akanic-Bantu. This plain/implosive distinction (and therefore the significance of Potou phonological innovations) will be discussed further below. The view taken in this thesis is that Proto-Potou-Akanic-Bantu is merely a renaming of the lowest intermediate node at which Potou, Akanic and Bantu were a single genetic entity based upon component parts of this node. However, following Williamson and Blench's (2000) classification the name by which said node will be referred is Proto-Benue-Kwa. Therefore Proto-Benue-Kwa and Stewart's Proto-Potou-Akanic-Bantu will be treated as coterminous in this thesis.

Stewart (1973, 1983, 1993, 2002) and Mukarovsky (1976-77). The work of each of these scholars was significantly influenced by Greenberg's Niger-Congo hypothesis. This Niger-Congo hypothesis represents a revision of Westermann's Western Sudanic hypothesis but which departs from it most dramatically by the inclusion of Bantu. By the inclusion of Bantu a situation was created by which Proto-Bantu, as convincingly reconstructed by Guthrie (1967-71), could take the place in Niger-Congo that the ancient languages Latin, Greek and Sanskrit held in Indo-European reconstruction. This is the work upon which Stewart and Mukarovsky have built. Williamson (1989: 22) cites Stewart's (1983) reconstruction of Proto-Volta-Congo consonants as depicted in the table below:

Table 1.1: Proto-Volta-Congo Consonants (Stewart 1983)

	labial		alveolar		palatal		velar		labio-velar	
stop										
fortis	**p**	**b**	**t**	**d**	**c**	**j**	**k**	**g**	**kp**	**gb**
lenis	**ʼp**	**ʼb**	**ʼt**	**ʼd**		**ʼj**	**ʼk**		**ʼkp**	**ʼgb**
[nasal]			**[m]**		**[ɲ]**		**[ŋ]**			**[ŋm]**
approximant					**l**					
[nasalized approximant]					**l̃**					

Stewart's reconstructions, particularly in relation to the fortis/lenis distinction, are remarkably similar to those of Mukarovsky's (1976-77) Proto-Western-Nigritic despite significant differences in methodologies employed by the two linguists. Basically, Mukarovsky's Proto-Western-Nigritic is a significantly abridged version of Westermann's Western Sudanic. Mukarovsky follows up Greenberg's (1963)

exclusion of Songhay with the exclusion of Mande. He then groups Mande together with Songhay on the outside and instead of bringing in Bantu and Fula as does Greenberg. He also excludes the whole of Benue-Cross, the group which Greenberg expands to include Bantu (and renames Benue-Congo). Mukarovsky also excludes from Western Atlantic the Fula-like languages which Greenberg cites as evidence for including Fula. Mukarovsky envisions his Western Nigritic as a whole as a branch of a Nigritic family, coordinate with an Eastern Nigritic branch with essentially the same membership as Greenberg's Benue-Congo. Thus, unlike Westermann whose work Mukarovsky builds upon directly, Mukarovsky frankly acknowledges the genetic relationship of the Western Nigritic languages to the Bantu languages (Stewart 2002: 200-1).

Table 1.2: Proto-Western Nigritic (Atlantic-Congo) consonants

	labial		alveolar		palatal		velar		labialized-velar	
stop										
fortis	**p**	**b**	**t**	**d**	**c**	**j**	**k**	**g**	**k^w**	**g^w**
lenis	**ʼp**	**ʼb**	**ʼt**	**l**			**ʼk**	**ʼg**	**ʼk^w**	**ʼg^w**
nasal		**m**		**n**				**ŋ**		**ŋm**
approximant			**w**				**y**			

Stewart (1993, 2002) has since departed from the fortis-lenis distinction in his reconstructions in favor of a plain/implosive contrast. He has also introduced a mutated/unmutated distinction into the discourse. The plain/implosive contrast as well as the mutated/unmutated distinction attributed to his Proto-Potou-Akanic-Bantu is derived largely from his forthcoming research on Fulanic groups. In regards to the

plain vs. implosive distinction Stewart states, “Although the putative cognates across the Fula-type languages and the Potou-Akanic-Bantu languages are very few, the eight Fula entries in Greenberg’s (1963: 13-24) Adamawa-Eastern comparative wordlist include two with (voiced) implosives, and both of these correspond to Proto-Potou-Akanic items with voiced implosives” (204).

Phonetic systems of natural language exhibit a phonological contrast between two types of a given sound. In proposing an implosive/plosive contrast, both plain and implosive stops are posited as having existed in what would be the ancestor language of Akan and Bantu. Therefore a plain and an implosive are reconstructed by Stewart to account for this balance typically exhibited in the consonantal systems of natural language. This implosive distinction occurring in a few of the daughter languages is hypothesized as being inherited directly from Stewart’s Proto-Potou-Akanic-Bantu to be discussed below. The implosive distinction in Stewart’s research is based primarily on his analysis of the stop system of Mbatto, one of the two Potou languages and the Fula-type languages. Using correspondences between the three-stop system of Mbatto and the Fula entries of Greenberg’s (1963: 13-24) Adamawa-Eastern comparative wordlist as justification, Stewart has proposed a schema of sound change (the Second Tano Consonant Shift), which is purported to be similar to Grimm’s Law (Stewart 1993). This notion of implosives as being attributable to the proto-language of Akan and Bantu however may call for further investigation.

Implosives, being relatively rare sounds occurring in only ten percent of the world’s languages, have, in certain instances, been derived from the existence of geminates in the proto-language (Ladefoged 2001: 133). As an alternative to the hypothesis that implosives existed in Proto-Benue-Kwa, it may indeed be the case

that the existence of implosives in daughter languages such as Mbatto and Fula languages may be as the result of lengthening throughout long voiced obstruents. In other words voiced obstruents such as /d/, /b/ and /g/ may occur as geminates such as /dd/, /bb/ and /gg/. The lowering of the larynx that occurs in the attempt to maintain voicing throughout the sound may eventually cause the geminate to change into an implosive /ɗ/, /ɓ/, and /ɠ/. This becomes a plausible hypothesis in light of the fourth implicational law, which states that less common sounds tend to be less stable than common ones and are thus more likely to be lost or changed over time. Thus it may be questioned based on attested notions of sound change whether or not these implosives were inherited unchanged over the period of significant time and spatial depth from Stewart's Proto-Potou-Akanic-Bantu, which, he claims, is coterminous with Niger-Congo. The study of phonetics may prove instructive in pursuing this question further.

Phoneticians Ohala (1983, 1997) and Westbury and Keating (1986) are often cited as observing the difficulty in maintaining glottal pulsing throughout long (geminate) voiced obstruents. From Ohala's pellucid explanation, lowering the larynx to maintain voicing throughout these geminates potentially leads to the formation of implosives (e.g., **bb** > **ɓ** in Sindhi, Ohala, 1997). Kingston and Diehl, citing Ohala's Sindhi example, state that the development of voiced implosives 'exemplifies minimal exertion of phonetic control' thus arguing that simplification of articulation is the underlying basis of this sound change (1994: 424). However, if the Sindhi case represents a minimal phonetic pair and if phonetic significance implies perceptual significance, then the phonetic explanation must provide some understanding of the relative rarity of voiced implosives. Theories must also accommodate for the

disharmonic relation between ease of articulation and typological frequency (Purnell: Personal Communication; October 16, 2004).

Notwithstanding the need for such theories paralleling ease of articulation with typological frequency or lack thereof, the attested derivation of implosives from geminates may plausibly account for the reason why implosives are so relatively rare in Proto-Benue-Kwa daughter languages. The existence of these sounds could be explained by attributing them to a lengthening process that precipitated the existence of implosives in Potou languages and Fula languages. This is a possible explanation given the typological existence of other languages possessing geminates located in areas contiguous with Proto-Benue-Kwa daughter languages with implosives. As Hoenigswald points out, sound change due to areal typology is a known cause of one language's phonemic structure, or at least phonemic inventory becoming more similar to that of its neighbors, whether related or unrelated (Hoenigswald: 83-85). As such, the typological existence of related languages with geminates might point to the existence of geminates in Potou and Fula at an earlier stage in the language. Based on the research of Ohala and others on implosives, such a hypothesis would claim that geminates changed into implosives in a relative few daughter languages while other daughter languages in the region retained the geminates.

If this attested sound change from long voiced obstruent to implosive was the process that was undergone in actuality, there would be vast implications for Stewart's Proto-Potou-Akanic-Bantu (Proto-PAB) reconstruction.[2] This would provide an alternative hypothesis to the first component of the Tano consonant shift wherein

[2] Stewart proposes his Proto-Potou-Akanic-Bantu, so named because these are the languages used in his analyses, as a pilot-Niger-Congo. As explained below, the view taken in this thesis is that this Proto-Potou-Akanic-Bantu is more accurately a pilot-Proto-Benue-Kwa.

implosives become plain stops and the similar consonant shift that would necessarily need to be extended to the majority of Proto-Benue-Kwa daughter languages that do not have implosives. Similarly an alternative hypothesis may better account for the reason why sound correspondences between other daughter languages for which Stewart posits an implosive in the proto-language do not have a plain/implosive distinction but rather exhibit interlanguage correspondences of plain stops. However, such an alternative hypothesis would necessarily need to explain the exact nature of the phonological distinction occurring in the proto-language in question if the plain/implosive distinction is rejected.

In lieu of recent research regarding the relationship between geminates and implosives as alluded to above, it is possible that sounds that occur as plain stops in daughter languages may have been inherited unchanged from the proto-language. Such an alternative hypothesis to positing implosives in the proto-language from which Akan and Bantu are descended may simply state that in certain languages the length distinction was lost whereas in other languages, in an attempt to maintain the voicing throughout the geminate, the sounds in question gradually developed into implosives in a small minority of daughter languages. In such a hypothesis, other daughter languages would be conceived of as maintaining geminates and a long/short distinction in their phonological inventories. Although this is presented as a possible alternative hypothesis, the hypothesis of a plain/implosive distinction is certainly worth entertaining in determining the degree to which it accounts for available data in contemporary languages.

In addition to abandoning the fortis/lenis distinction in favor of a plain/implosive distinction based upon data from Fula-type and Adamawa-Eastern languages,

Stewart (2002) has also abandoned his view of the legitimacy of Volta-Congo (among other classifications), a classification that he himself largely popularized (Stewart 1976). Discrediting the validity of Volta-Congo would allow his Proto-Potou-Akanic-Bantu to be acknowledged as a pilot-Proto-Niger-Congo rather than the more modest pilot-Proto-Benue-Kwa that it would be by Williamson and Blench's (2000) classification (Stewart 2002: 198-199). At this point, however, there is no concrete evidence or alternative model of genetic classification that compels one to follow Stewart in this regard. Even Stewart concedes the possibility that his Proto-Potou-Akanic-Bantu may not go back as far as Proto-Niger-Congo in his statement that "Even though it remains possible that Proto-Potou-Akanic-Bantu may not go quite as far back as Proto-Niger-Congo, it still appears to go back far enough to serve as a pilot Proto-Niger-Congo" (204).

The view taken in this thesis is that Stewart's work, as the only proposition based upon the comparative method ancestral to Proto-Bantu, may serve as a pilot proto-language. It may provide a valuable foundation from which to build upon as it has built upon the work of such scholars as Greenberg, Guthrie and others. Nonetheless, the critiques of other linguists who have rejected the comparison of Akanic and Bantu must be addressed. Many of these critics have rejected Proto-Potou-Akanic-Bantu on the grounds that it does not, nor could it truly even be expected to, fully take account of the rest of the Niger-Congo languages that it is said to represent. However it has not been rejected as a *pilot* proto-language.

The next logical step in the process of reconstruction is one wherein other daughter languages are brought into the comparison to determine the exact degree to which Stewart's Proto-Potou-Akanic-Bantu, which, as explained above, is treated

in this thesis as coterminous with Williamson and Blench's (2000) Proto-Benue-Kwa, provides accurate coverage. This thesis picks up where the discourse leaves off by doing just that.

Although much work has been done in the areas of African language classification (Bennett and Sterk 1977, Bendor-Samuel 1989, Williamson and Blench 2000) and proto-language reconstruction (Mukarovsky 1976-77, Elugbe 1989, Stewart 2002 etc.), the only model of reconstruction based on the comparative method ancestral to Proto-Bantu has been in the work of Stewart (1973, 1983, 1993, 2002). His Proto-Potou-Akanic-Bantu reconstructions are based on a comparative analysis of Akan and Bantu. According to Greenberg's (1963) classification, Proto-Potou-Akanic-Bantu would be a pilot-Proto-Niger-Congo, which is the view that Stewart holds. However, according to the most current classifications (Williamson and Blench 2000), Proto-Potou-Akanic-Bantu is coordinate with Proto-Benue-Kwa (Stewart 2002: 199). Following Williamson and Blench, the lowest intermediate node from which Akan and Bantu (and Yoruba) are descended is referred to as Proto-Benue-Kwa.

Stewart's most recent reconstructions of the stem-initial consonant of Proto-Potou-Akanic-Bantu (=Proto-Benue-Kwa), as depicted in Table 1.3 appear to be almost a composite of his Volta-Congo and Mukarovsky's Proto-Western Nigritic reconstructions as cited above in Tables 1.1 (pg. 22) and 1.2 (pg. 23) with the addition of the mutated consonants based on Fula-type languages which have not yet been factored into his work in reconstruction (Stewart 2002: 208, 209):

Table 1.3: Proto-Potou-Akanic-Bantu stem initial consonant system (C1)[3]

[3] Stewart does not make the distinction between + vc and –vc sounds in his chart focusing rather on his plain vs. implosive distinction.

a. Unmutated	**p**	**t**	**c**		**k^{w}** plain stops [-vc]
	ɸ	**ɬ**		**ƙ**	**ƙ^{w}** implosives [-vc]
	b	**d**	**j**	**g**	**g^{w}** plain stops [+vc]
	ɓ	**ɗ**	**ʄ**		**ɠ^{w}** implosives [+vc]
			y		palatals
	ṽ	**Ỉ**		**ɯ̃**	**w̃** nas'd sonorants
	m	**n**			nasals
b. Mutated	**mp**	**nt**	**ɲc**		**ŋk^{w}**
	mɸ	**nɬ**		**ŋƙ**	**ŋƙ^{w}**
	mb	**nd**	**ɲj**	**ŋg**	**ŋg^{w}**
	m	**n**	**ɲ**		**ŋ^{w}**
			ɲ		
	m	**n**		**ŋ**	**ŋ^{w}**

Table 1.4 The first-position vowels (V1)

i	**ɪ**	**ɛ**	**a**	**ɔ**	**ʊ**	**u**
ĩ	**ɪ̃**	**ɛ̃**	**ã**	**ɔ̃**	**ʊ̃**	**ũ**

Table 1.5 The second-position consonants (C2)

p	**t**	**k**
	nt	**ŋk**
ν/ṽ	**l/Ỉ**	**ɯ/ɯ̃**
	m	**n**
mb		**ŋg**
	n	

For the purposes of this thesis, Stewart's reconstructions of the initial consonant C1 will be focused upon.

Although Stewart is correct in his assessment that it is not compulsory to have a sample of all daughter languages at the outset of reconstruction, any such

reconstruction must ultimately take proper account of all daughter languages. The validity of this idea has been proven by the Indo-European case, which has, for all intents and purposes, attained the elusive goal of full coverage. This may also be done in the milieu of African linguistics. This is the undertaking that is being initiated in this thesis.

Chapter 3

3.1.1. Theoretical Framework

The work of comparative linguistics is to identify and explain certain similarities between languages not attributable to chance in that they can only be accounted for

as the systematic correspondences of genetically related languages. That is to say, the languages in question are descended from a common ancestor language (Hock 456).

Not all similarities—or dissimilarities for that matter—between languages in their vocabulary or in any other realm are automatically indicative of genetic relationship. It is also, therefore, the work of comparative linguists to ascertain whether or not certain other factors, such as chance, are at play in regards to perceived or real linguistic similarities. According to Hock "We can avoid being misled by chance similarities if we insist that our comparison be based on a very large data base. For if we find striking similarities in pronunciation and meaning in, say, a thousand words, the possibility that these similarities are due to chance becomes rather remote" (460-461). In addition to gleaning information from a large data base, certain types of words that are notoriously unreliable for establishing genetic relationship, such as onomatopoeia and nursery words (i.e. mama, papa), must be eliminated. In the case of nursery words, for instance, the predominance of the vowel, **a**, and the reduplication of CV labials, alveolars and nasals is a common feature of languages throughout the world. While similarities between these types of words may make for interesting research, they do not provide a very useful tool for establishing genetic relationship.

The comparative linguist must also eliminate similarities due to linguistic contact. Such similarities may occur to the extent that two unrelated languages may appear to be related when restricted to certain, limited spheres of the vocabulary, especially in the sphere of technical vocabulary. On the other hand when similarities pervade the whole lexicon, including the basic vocabulary, this is much more

compelling evidence of genetic relationship due to the fact that borrowing has the least effect in the area of basic vocabulary including closed lexical categories (Hock 463). For this reason, resources such as the Swadesh List, named after and originally developed by renown linguist Morris Swadesh, are indispensable to the comparative linguist looking for an authoritative list of basic vocabulary that more or less cuts across the lexicon of the world's languages applying equally to all. As mentioned, this list necessarily includes closed class items such as prepositions, conjunctions, determiners/pronouns, complementizers, and auxiliaries/modals. As opposed to open class categories such as nouns, verbs, and adjectives/adverbs, membership in closed class categories is limited and coinages are extremely rare. Basic vocabulary items in the lexicon are therefore optimal for linguistic comparison between two or more languages. The Swadesh List, however, is usually revised based on the specific dynamics of the region in which the language is spoken and inclusion of other basic vocabulary items for which interlanguage borrowing is improbable. In instances when open class categories are used in comparative linguistic analysis, it behooves the comparative linguist to focus on basic vocabulary such as primary colors, basic numbers, and other nouns and verbs that are unlikely to be borrowed (such as 'death,' 'one,' etc.).

Although there are other ways in which languages may prove to be similar or dissimilar, comparative linguists tend to focus on vocabulary and correspondences that emerge from an examination of vocabulary rather than syntax or phonetics. In a given language family, such as Indo-European, for example, there are attested languages, which display VSO, SVO, and SOV orders of basic sentence structure (464). Although genetic relationship clearly exists, this fact is not readily evident

through any analysis of the syntax (although syntax may be reconstructed in the later stages of proto-language reconstruction). In such cases, similarities and differences in basic syntactic structure, however interesting a topic, are, nonetheless, still not very good indicators of genetic relationship. Therefore comparative linguists focus primarily on cognates in vocabulary with basic vocabulary receiving the highest priority due to the fact that basic vocabulary is least likely to be borrowed and more likely to be inherited directly from the proto-language. This approach is therefore used in this thesis

Arguments for genetic relationship between languages are strengthened when lexical, or, to be more precise, phonological and/or morphological similarities are identified between apparently cognate words. Further validity is attached when phonological and/or morphological similarities are not haphazard or sporadic, but systematic and recurrent in large sets of words. That is to say, differences between languages must be readily explained through the operation of natural and regular laws of sound change. The ability to find such regular and systematic correspondences between two languages, particularly in reference to basic vocabulary is the cornerstone of establishing genetic relationship (464).

The case for genetic relationship can be further improved by the identification of shared morphophonemic alternations and patterns because these also are not, under normal circumstances, borrowed from one language to another. Morphological aberrancies exhibited by such patterns, therefore, especially when they involve systematic phonological correspondences, would be difficult to explain except as reflecting common heritage (465).

For most comparative and historical linguists, however, the ultimate proof of genetic relationship lies in reconstruction. This proof must, similar to a court of justice, establish one's case for genetic relationship beyond a reasonable doubt. This proof must furthermore be based on a large amount of lexical items and conform to a set of evaluative principles: reconstructed items and systems, and postulated linguistic changes should be natural and postulated sound changes must be regular, in conformity with the regularity principle which states that sound change is overwhelmingly regular (466). It further assumes that each sound of a given dialect will be changed similarly at every occurrence in like circumstances, if it is changed at all (Jeffers and Lehiste 1979: 17). There must also be a phonetic value attached to reconstructed sounds and any such reconstructed sounds must explain occurrences in daughter languages based on principles of phonological change.

Finally, the reconstruction must not violate Occam's Razor, a maxim fundamental to all scientific inquiry, which states, "'Entities [in an argument] should not be multiplied beyond necessity.' In comparative reconstruction, such 'entities' are (i) reconstructed items, and (ii) changes required to convert these items into the forms attested in the descendant languages" (468).

Wherever possible, comparative linguists attempt to use the oldest stages of the languages in question possible when reconstructing older proto-languages. This makes reconstruction simpler, since less time has passed, and thus there has been less chance for linguistic changes to obscure the relationship between the languages. It functions on the same principle to begin reconstruction of less ancient stages of proto-languages with contemporary languages because less time has passed between modern-day descendant languages and their more recent predecessors.

Once data from these more recent proto-languages are compiled, they can be analyzed and compared to shed light on the nature of more ancient stages of the proto-language.

One should keep in mind, nevertheless that all reconstructions are basically hypotheses about the nature of the proto-language. Although appealing to such theoretical principles as Occam's razor and naturalness does provide the comparative linguist with general guidelines for excluding questionable hypotheses, in the end reconstructions rely on the judgments of comparative linguists. This is where the majority of the disagreements in the field of comparative linguistics arise. However, as comparative linguists, "We don't really have any choice; we have to develop hypotheses, even if they are 'hypothetical' and often controversial. If we really knew what the proto-language was like, we wouldn't have to do reconstruction" (468).

Chapter 4

4.1.1. Research Methods and Methodology

The main technique for comparative analysis and reconstruction of a proto-language's phonology, morphology and syntax is the *comparative method*. The comparative method is typically carried out on languages **already presumed or demonstrated to be related; it is not an essential classificatory tool used for**

establishing relationships as such (Newman 2000: 265). Although classificatory issues are not the focus of this thesis, the present study may indeed have implications for current classifications of languages of the Niger-Congo family. This is because, if Stewart's proposition stands, his Proto-Potou-Akanic-Bantu would be a pilot Proto-Niger-Congo rather than a pilot Proto-Benue-Kwa as it would be based upon current classifications.

The central focus of this thesis is the identification of recurrent sound correspondences between the C1 of Akan (Kwa) and Yoruba (Benue-Congo), and its significance for Proto-Benue-Kwa (East Volta-Congo) reconstruction, with particular reference to reconstruction of the phonological inventory of Proto-Benue-Kwa. The comparative method will be used in the development of this reconstruction. The comparative method consists of examining words with similar meanings in languages assumed as being descended from a common protolanguage in hopes of discovering regular sound correspondences and reconstructing the protolanguage. For example, the initial consonants in a set of words suspected of being cognates are compared with one another, as cognates will usually have similarities in both form and meaning (Jeffers and Lehiste: 17).

Implicational laws of sound change must also be applied to determine the plausibility of reconstructions posited in this study, which will then be used to confirm, deny or refine specific aspects of Proto-Benue-Kwa C1 reconstruction proposals currently on the table. Implicational laws employed in historical linguistics are outlined below:

Implicational Laws

1. the presence of a less common sound in a language implies that its more common counterpart will also be present
2. less common sounds have limited usage and distribution that do make use of them, as compared with common sounds.
3. the use of common sounds is acquired before the use of less common ones.
4. less common sounds tend to be less stable than common ones and are thus more likely to be lost or changed over time.

These implicational laws are crucial to an analysis of sound change especially in relation to relative chronology. Relative chronology is helpful in that even when we cannot be sure about the 'absolute' chronology (i.e. when the changes took place in historical time), we are at least able to demonstrate their relative ordering based upon the precedent of sound change in attested natural languages.

The implicational laws cited above rely heavily upon the concept of "common sounds." This term, however, requires further definition. For example, in natural language it is attested that voiced nasals and liquids are more common than voiceless ones, oral vowels are more common than nasal vowels, and consonants of normal length are more common than those with the secondary articulations like velarization, palatalization, and labialization, although these are not always necessarily longer in terms of phonetic duration of segments. The most common class of sounds is the stop/plosive class, being the only class of consonants that occur in all known languages in the world. Meanwhile, fricatives and approximants are less common due to comparatively difficult articulatory gestures required for their production (Ladefoged 47).

Knowledge of implicational laws as general guidelines for understanding sound change allows the comparative linguist to develop feasible hypotheses regarding the nature of a proto-language's phonological inventory and the relative development of sound change to the present state of the daughter languages being analyzed. Thus, implicational laws and rules of sound change form critical elements of the methodology of comparative linguistics.

In the present study, lexical items in Akan and Yoruba are compared in order to establish regular sound correspondences based on the stem-initial consonant (C1) with a primary focus on basic vocabulary. In this comparison, it will become evident that patterns of correspondences exist wherein a sound X in Akan regularly matches some sound Y in Yoruba. In establishing recurrent sound correspondences, sometimes the sound X and the sound Y are identical or nearly so, but this is not required. What is essential is that the sounds systematically correspond. Presumed cognates between Akan and Yoruba will then be correlated with Proto-Bantu and Common Bantu data to further add credence to the lexical and sound correspondences proposed. These lexical items will then be used to determine the relationship between the regular and recurrent sound correspondences evident in the data and the sound system reconstructed by Stewart (2002). Subsequently, a feasible hypothesis of sound change, including a plausible relative chronology, will be developed when possible by identifying whether or not the data in this study supports or refutes currently proposed proto-reconstructions of the Proto-Benue-Kwa phonetic system.

An underlying supposition, and one that is fundamental to comparative linguistics is that sound change is overwhelmingly regular. This means that in certain

environments, sounds follow natural patterns of change as mediated by phonological rules and by implicational laws. The preliminary data analysis and discussion sections below therefore consist of taking stock of the phonological elements found in the proto-lexicon of Akan and Yoruba. Taking stock of these phonological elements is part and parcel of moving towards an accurate reconstruction of the original C1 phonological inventory of the Proto-Benue-Kwa proto-language which, in principle, could have been richer or skimpier than that of the daughter languages (Newman 266).

Upon identification of comparative pairs and the establishment of regular sound correspondences, the results of preliminary data from the current study will be juxtaposed with current models of Proto-Benue-Kwa reconstruction and insights revealed will be addressed in the discussion of the data below. As the current study and future research are brought to bear on the discourse of linguistic reconstruction, we will gain a clearer and broader picture of the proto-languages from which the contemporary languages of Africa are descended.

Preliminary Data Analysis and Interpretation

In the preliminary data below, 188 comparative pairs have been identified in which the sound correspondences between Yoruba and Akan are, in most cases, transparent. In any case, proposed sound changes are articulated through phonological rules of sound change. Issues concerning reconstructions of Proto-Benue-Kwa to date will be discussed in the conclusion of Chapter Four and in the summary and conclusion of Chapter Five.

In selecting comparative pairs, data has been extrapolated from the first two Swadesh Lists including over 400 basic lexical items. The Yoruba (Yor) entries are largely taken from The Church Missionary Society's *A Dictionary of the Yorùbá Language* (1991) and Ọlabiyi Babalọla Yai's *Yoruba-English/English-Yoruba Dictionary* (1996). The only revisions to the dictionary transcriptions have been in representing entries phonetically according to IPA conventions rather than orthographically. Thus, **p** becomes **kp** and **j** becomes **ʤ**. Nasality is marked with a tilde (~) immediately above the nasal. Also, whereas *A Dictionary of the Yorùbá Language* uses the tilde to mark tones of consecutive vowel sequences, in the transcription adopted here, each vowel is represented individually with its respective tone. In the case of the Akan (Ak) entries, Christaller's (1933) *Dictionary of the Asante and Fante Language*, the most thorough Akan dictionary to date, has been relied upon. The only revisions that have been made to Christaller's transcriptions have been in representing lexical entries phonetically, again opting for IPA representations of vowels and consonants and marking nasality with a tilde.

Subsections in the discussion of data are based upon place of articulation from labial-velar to approximant. The pairs listed are systematically categorized based upon stem-initial (C1) and, where relevant, stem final (C2) consonant correspondences. This study will, however, focus on the C1 including diachronic rules as well as a relative chronology of sound change for each comparative series between Yoruba and Akan. The C2 is considered only when C2 sound change is considered to be part of a general sound change affecting all consonants of the language regardless of position or when there is evidence that the original C1 has been lost. In line with convention, all reconstructed forms and sounds are marked

with an asterisk (*****) to denote a non-attested form rather than one that actually occurs in a language we know through written records or that is currently being used by some speech community. The central focus of this chapter will be to establish systematic patterns of sound change based on natural classes and/or phonological environment. A second consideration will simply be to present data and to introduce questions for consideration in the current discourse of Proto-Benue-Kwa reconstruction. Such an exercise is needed in hashing out certain inconsistencies and anomalies in the pursuit of an accurate schema of reconstruction that provides a coverage for daughter languages that is as consistent with the data at hand as possible.

4.1.3. Data: Yoruba and Akan Lexical Correspondences by C1

	Yorùbá	***Akan***
1.	**kpá** *'to be bald'*	**pà** *'to be bald'*
2.	**kpa** *'to rub'*	**pà** *'to rub/wipe'*
3.	**kpa** *'to crack/divide'*	**paí** *'to crack/divide'*
4.	**kpa** *'to extinguish fire'*	**pa-tá** *'to extinguish fire'*
5.	**kpo** *'to knead'*	**pɔtɔ́** *'to knead'*
6.	**kpɔ̀** *'to throw up/to vomit'*	**pò/pù** *'to throw up/to vomit'*
7.	**kpé** *'to be complete'*	**pɛ́** *'to be complete'*
8.	**ikpĩ** *'matter in corner of eyes'*	**mpí** *'matter in corner of eyes'*
9.	**kpĩ** *'to end'*	**pi̍m** *'to end'*
10.	**ɔ̀kpɛ** *'palm tree'*	**abɛ́** *'palm tree'*

	Yorùbá	*Akan*
11.	**akpá** *'arm'*	**abá** *'arm'*
12.	**èèkpo** *'bark'*	**ɔbɔ̃n** *'bark'*
13.	**àgbàdo** *'maize'*	**æbŭró** *'maize'*
14.	**àgbɔ̃** *'chin'*	**æbodʑí** *'chin'*
15.	**ɔgbà** *'fence'*	**ɛbɑ̃ŋ** *'fence'*
16.	**ɛ̀gbĩ** *'dirt'*	**ebĩ̀ŋ** *'dirt'*
17.	**kú** *'to die'*	**wù** *'to die'*
18.	**ikú** *'death'*	**owú** *'death'*
19.	**ikɔ́** *'cough'*	**ɔwáw** *'cough'*
20.	**gṹ** *'to pound'*	**wɔ̀** *'to pound'*
21.	**gṹ** ***'***to stab/to pierce'	**wɔ̀(w)** *'to stab/to pierce'*
22.	**fá** *'to scrape'*	**pɔ̀w** *'to scrape'*

	Yorùbá	*Akan*
23.	**fá** *'to wipe'*	**pà** *'to wipe'*
24.	**fà** *'to draw'*	**pà** *'to draw'*
25.	**fɛ́** *'to like/want'*	**pɛ̀** *'to like/want'*
26.	**fààfá** *'a coarse mat'*	**apãã́** *'a coarse mat'*
27.	**féfé** *'cleanly'*	**pífíí** *'clearly'*
28.	**fĩ́** *'to smoke'*	**pũ̀n** *'to smoke'*
29.	**afɛ́fɛ́** *'wind'*	**ɔpɛ́** *'harmattan wind'*
30.	**fɔ́** *'break'*	**bɔ̀** *'break'*
31.	**wà** *'to be/to exist'*	**ŋ−kʷã́** *'life'*
32.	**wɛ̀** *'to bathe'*	**gʷar[-]í** *'to bathe'*
33.	**àgò** *'call to enter'*	**ǽgòò** *'call to enter'*
34.	**àga** *'seat'*	**agʊá** *'seat'*
35.	**àgùtã̀** *'sheep'*	**oguã́ŋ/odʑɥã́ŋ** *'sheep'*

	Yorùbá	*Akan*
36.	**àdá** *'cutlass'*	**àdárí** *'cutlass'*
37.	**di** *'to become'*	**dì** *'to become'*
38.	**dé** *'to arrive'*	**dù** *'to arrive'*
39.	**dà** *'to become'*	**daní** *'to become'*
40.	**ìdɔ̀tí** *'filth'*	**dɔ̀tí** *'dirt'*
41.	**bù** *'to break off'*	**bu** *'to break'*
42.	**ibú** *'deepest part of water'*	**ebúnú** *'deepest part of water'*
43.	**bí** *'to ask'*	**bisá** *'to ask'*
44.	**biribiri** *'jet Black'*	**bírí** *'jet Black'*
45.	**bò** *'to cover'*	**bɥɪá** *'to cover'*
46.	**bá** *'to help'*	**bʊá** *'to help'*
47.	**ibí** *'place'*	**bɪa** *'place'*
48.	**ibi** *'evil'*	**bɔní** *'bad'*

	Yorùbá	*Akan*
49.	**bɔ̀** *‘to come’*	**bà** *‘to come’*
50.	**òbò** *‘vagina’*	**boo** *‘euphemism for vagina’*
51.	**abo** *‘female’*	**ɔbáá** *‘woman’*
52.	**ìbode** *‘gate’*	**abóbo** *‘gate’*
53.	**bɔ** *‘to worship’*	**bɔ** *‘to worship’*
54.	**àbɛ̀bɛ̀** *‘palm fan’*	**bérɛw** *‘leaves of oil palm’*
55.	**ikú** *‘death’*	**kṹm/kṹ** *‘to kill’*
56.	**ìkuukù** *‘cloud’*	**omṹnṹnkṹm** *‘cloud’*
57.	**ìkuukù** *‘fog’*	**kusukúùkúù** *‘fog’*
58.	**kúdúrú** *‘fist’*	**kutuku/kuturukú** *‘fist’*
59.	**eku** *‘rat’*	**ekúsie** *‘rat’*
60.	**èkúté** *‘mouse’*	**ekúsie** *‘rat’*
61.	**akùkɔ** *‘cock’*	**akúkɔ́** *‘chicken’*

	Yorùbá	*Akan*
62.	**ìkɔ̀kɔ̀** *'corner'*	**kʊkʊá** *'corner'*
63.	**kẩ** *'touch'*	**kẩ** *'touch'*
64.	**kà** *'to read/to count'*	**kẩŋ** *'to read/to count'*
65.	**ɔ̀kã** *'one'*	**ɛ̀kõ** *'one'*
66.	**ɔ̀kã** *'one'*	**-kãŋ** *'first'*
67.	**òʃù-ká** *'headpad'*	**ká-hiri** *'headpad'*
68.	**kù** *'to remain'*	**kà** *'to remain'*
69.	**kékeré** *'small'*	**kakĕrá** *'small'*
70.	**ɔkẩ** *'heart'*	**akʊ̃mấ/kónổnẩ** *'heart'*
71.	**kókó** *'small hard particle'*	**kóko** *'small hard particle'*
72.	**okó** *'penis'*	**kɔtí** *'penis'*
73.	**akɔ** *'male'*	**kɔtí** *'penis'*
74.	**ɔkɔ** *'husband'*	**okʊ̃nʊ̃** *'husband'*

	Yorùbá	*Akan*
75.	**ɔkʊ̀rʊ̃̀** *'man'*	**okʊ̃́nʊ̃́** *'man'*
76.	**kɔrɔdɔ** *'bent/crooked'*	**kurʊ̃́m** *'bent/crooked'*
77.	**kéré** *'small/little'*	**kítíkítí** *'small/little'*
78.	**ɔ̀kɛ́rɛ́** *'squirrel'*	**ætɕírítɕí** *'squirrel'*
79.	**kí** *'to greet'*	**tɕɪá** *'to greet'*
80.	**kì** *'to press'*	**tɕì̃** *'to press'*
81.	**etí** *'ear'*	**tié** *'to listen'*
82.	**etí** *'ear'*	**tì** *'to hear'*
83.	**tú** *'to dig up'*	**tù** *'to dig up'*
84.	**tòrò** *'smooth'*	**tŏro** *'smooth'*
85.	**tóbi** *'big'*	**topé** *'huge'*
86.	**ta** *'to shoot'*	**tò** *'to shoot'*
87.	**ta** *'to shoot'*	**ɛtá** *'bow'*

	Yorùbá	*Akan*
88.	**ta** *'to kick'*	**tɪá** *'to kick'*
89.	**tɛ̀** *'to step on'*	**tɪá** *'to step on'*
90.	**ɪtɔ́** *'spittle'*	**n-tæ-sú (-sú: water)** *'spittle'*
91.	**tutɔ́** *'to spit'*	**tò** *'to spit'*
92.	**tà** *'to sell'*	**tɔ̀ŋ** *'to sell'*
93.	**tĩrĩ** *'thin'*	**tĩ́áá** *'thin'*
94.	**tààrà** *'straight'*	**tĩ̀ĩ̀** *'straight'*
95.	**ìfũ** *'intestines'*	**jæfű́nű́/æfúrú** *'belly'*
96.	**ogũ** *'war'*	**ɔkő** *'war'*
97.	**dù** *'to struggle over'*	**tù** *'to pull'*
98.	**dúdú** *'black/dark'*	**tũntũḿ** *'black/dark'*
99.	**dì** *'freeze'*	**ʈɕì̀n** *'freeze'*
100.	**dè** *'to tie up'*	**ʈɕìɪr̀ì** *'to tie up'*

	Yorùbá	*Akan*
101.	**dǐ́** *'to fry'*	**ʧɛ̀ɪ** *'to fry'*
102.	**ɛ̀bá** *'side'*	**ɔfã́** *'side'*
103.	**bì** *'vomit'*	**fɪ** *'vomit'*
104.	**kǐ́** *'to stuff/to cram/to press tight'*	**hĩ̀ŋ** *'to be stuck between/to be wedged in'*
105.	**káǐ́** *'exclamation of wonder'*	**háì** *'expression of astonishment'*
106.	**tó** *'to be enough'*	**sʊ̃** *'to be enough'*
107.	**tɛ́** *'to spread'*	**sɛ̀** *'to spread'*
108.	**tã́** *'to be finished'*	**sã̀** *'to be finished'*
109.	**tã̀** *'to light'*	**sɔ̀** *'to light'*
110.	**ìtɔ̀** *'urine'*	**-sɔ** *'urine'*
111.	**tɔ̀** *'urinate'*	**-sɔ́** *'urinate'*
112.	**ɛ̀ta** *'three'*	**ɛ̀sã** *'three'*
113.	**tí** *'that'*	**sɛ** *'that'*
114.	**tè** *'to worship'*	**sʊ̃m** *'to worship'*

115.	**té** *'on top'*	**sò** *'on top'*
116.	**etí** *'ear'*	**asʊ̋** *'ear'*
117.	**fɔ̃** *'lose weight/diet'*	**fɔ̃ŋ** *'lose weight/emaciate'*
118.	**fɛ̀** *'to widen'*	**fɛ́** *'to spread'*
119.	**fũfũũ** *'white'*	**fúfúo** *'white'*
120.	**ɛ̀mɪ̋** *'breath'*	**hʊ̃mɪ̋** *'to breathe'*
121.	**èmi/mo/mi/ŋ** *'I/me'*	**mi/mɪ** *'I/me'*
122.	**mũ** *'drink'*	**nʊ̌m**ʔ/**nʊ̌mʊ̀** *'drink'*
123.	**ɪ̀mɔ̌** *'knowledge'*	**nɪ̀m** *'to know'*
124.	**mɪ̀** *'swallow'*	**mɪ̀nɪ̀** *'swallow'*
125.	**mɑ̋** *'do not'*	**mmɑ̃** *'do not'*
126.	**mʊ̀** *'to sink'*	**mɪ̀m** *'to sink'*
127.	**ʊ̌ũn/ó** *'he/she'*	**ɔ̃nʊ̋/ɔ́-** *'he/she'*

	Yorùbá	*Akan*
128.	**ɛ̃nĩ́** *'person'*	**-nĩ́/-nĩ-** *'person'*
129.	**nĩ** *'to be'*	**nĩ** *'to be'*
130.	**nĩ́torí** *'because'*	**ntɪra** *'because'*
131.	**nĩ́torí** *'because'*	**éntí** *'because'*
132.	**inṹ** *'stomach'*	**jæfṹnṹ/æfúrú** *'stomach'*
133.	**ɛnũ** *'mouth'*	**anʊ̃** *'mouth'*
134.	**ɛ̀nĩ́/ònĩ́** *'today'*	**ɛnnɛ̃́** *'today'*
135.	**nĩ̀jí** *'to be this/here'*	**nĩ́é/ne èjí** *'to be this/here'*
136.	**nãã̀** *'the/that'*	**nʊ̃** *'the/that'*
137.	**ɛ̀rĩ́** *'laughter'*	**sɪrí** *'to laugh'*
138.	**ire** *'blessing'*	**nɕìrá** *'blessing'*
139.	**orí** *'head'*	**tírí** *'head'*
140.	**ooru** *'heat'*	**ohuhúró** *'heat'*

	Yorùbá	*Akan*
141.	**ɛrù** *'load'*	**dùrù** *'heavy'*
142.	**irɔ́** *'falsehood'*	**atórɔ́** *'falsehood'*
143.	**ɛrã̀** *'meat'*	**ɛnã́m** *'meat'*
144.	**ɛ̀rĩ̀** *'four'*	**anã́ŋ** *'four'*
145.	**àrṹ-ú́** *'five'*	**ænṹ́m** *'five'*
146.	**rĩ̀** *'walk'*	**nã̀m** *'walk'*
147.	**rà** *'buy'*	**tɔ̀** *'buy'*
148.	**rɔ̀** *'to rain'*	**tɔ̀** *'to rain'*
149.	**èérú** *'ashes'*	**n-sṹ́** *'ashes'*
150.	**rù** *'to carry'*	**sʊ̀** *'to carry'*
151.	**ìsisĩ̀jí** *'now'*	**sesée jí** *'now'*
152.	**sĩ̀** *'to bury'*	**sié** *'to bury'*
153.	**so** *'to bear fruit'*	**sʊ̀** *'to bear fruit'*

	Yorùbá	*Akan*
154.	**sà** *‘to apply medicine’*	**sà** *‘to heal’*
155.	**sà** *‘to apply medicine’*	**sɔ̀** *‘to apply medicine’*
156.	**sḭ́** *‘to make incisions’*	**sà** *‘to make incisions’*
157.	**sɔ̀** *‘to put down’*	**sʊɛ́** *‘to put down’*
158.	**sḭ́** *‘to sneeze’*	**ŋwãnsḭ́** *‘to sneeze’*
159.	**sḭ́** *‘to string’*	**sĩná** *‘to string’*
160.	**sí** *‘to’*	**sí** *‘to’*
161.	**sẩ** *‘to be better’*	**sḭ̃ŋ** *‘to be better’*
162.	**sũ** *‘to cry’*	**sũ** *‘to cry’*
163.	**hó** *‘to boil’*	**hùrù** *‘to boil’*
164.	**ìhḭ̃jí/nḭ́hḭ̀ḭ́** *‘here’*	**ɛhá/nḭ́hẩã́** *‘here’*
165.	**há** *‘narrrow’*	**hḭ̃hḭ̃aá** *‘narrow’*
166.	**hű́/jű́** *‘to itch’*	**ɦḭ̃nḭ̀ḭ̃** *‘to be itchy’*

	Yorùbá	*Akan*
167.	**dì** *'to tie knot'*	**sì** *'to tie knot'*
168.	**dí** *'to prevent/stop up'*	**sìw** *'to prevent/stop up'*
169.	**ʃá** *'to cut'*	**sà** *'to make incisions'*
170.	**ʃá** *'to spark a fire'*	**sɔ̀** *'to spark a fire'*
171.	**ʃå** *'to flow'*	**sĩŋ** *'to flow'*
172.	**ʃà** *'to pick up'*	**sà** *'to pick up'*
173.	**ʃú** *'to be dark'*	**sũm** *'to be dark'*
174.	**ɔ̀ʃɔ** *'thorns used in pitfalls'*	**nsɔ̀í** *'thorns'*
175.	**ɔ̀rũ** *'sky'*	**ɔ-sʊ́rʊ̀** *'sky'*
176.	**jɛ** *'to be proper/fitting'*	**jɛ́** *'to be proper/fitting'*
177.	**jɛ** *'right/correct'*	**jé** *'right/correct'*
178.	**ìjà** *'suffering'*	**jɛá/ɛjáẁ** *'pain'*
179.	**aja/ìjàwó** *'wife'*	**ɔjírí** *'wife'*

	Yorùbá	*Akan*
180.	**jèjé/ìjá** *'mother'*	**ɔjɪ́rɪ́** *'wife'*
181.	**ìjàwó** *'wife'*	**æwó/ɛnã́/ɛnṍ** *'mother'*
182.	**àjà** *'chest'*	**jǽ-m̀/jǽ mu (mu-**inside) *'chest and stomach'*
183.	**èjí/jí** *'this'*	**ejí/jí** *'this'*
184.	**w̃ũ** *'weave'*	**ŋw̃ĩ̀nĩ̀** *'weave'*
185.	**awũ/ahũũ** *'tortoise'*	**æ̀wúrú/æ̀húrú** *'land tortoise'*
186.	**ìwɔ/o** *'you'*	**wo** *'you'*
187.	**w̃õ** *'them'*	**wɔ̃ŋ** *'them'*
188.	**wà** *'to be' (locative)*	**wɔ̀** *'to be' (locative)*

4.1.4 Discussion of Data

Where do the proto-phonemes come from?

In this chapter, proto-phonemes of the C1 are reconstructed. There were several criteria that were used in their reconstruction. The first of which included working from the clearest cases of apparent sound correspondences and working outward from them to less and less certain correspondences based on observed patterns. For example, there was a particular impetus for starting the analysis from the labial-velars. This impetus began with the relation between the voiceless labial-velar **[kp]** to the voiceless labial **[p]**. Amongst closely related languages such as Akan, Guan, Awutu, Larteh, Nkonya, and Krachi of the Guan language family and Nzema of the Bia language family (cf. Figure 1.1) for example, there are extensive correspondences between words still have doubly articulated stops **[kp, gb]** and Akan which has **[p, b]** (Mutaka 2000: 46). These doubly articulated stops have disappeared from most Akan dialects, although they were once widespread amongst the Akan, with **[kp]** only relatively recently replaced by **[p]** (Stewart 1972: 84).

This point is reiterated in Stewart's (1993) article entitled The Second Tano Consonant Shift and its likeness to Grimm's Law. In this article, Stewart compares Akan with these other closely related languages. One such comparison, "to take off the surface (to skim), to wipe' appears below:

Akan	Baule	Anyi	Awutu	Nkonya	Krachi
-pa	-kpa	-kpro	-pɔ	-kpa	-kpɛ

This generally accepted correspondence that also figures prominently in Stewart's (1966) comparative wordlist of Awutu, Larteh, Nkonya and Krachi and Twi (Akan) gave rise to the comparative series that appears in the Analysis of Data (4.1.5), section 1.1 below. In comparative series 1.1, systematic correspondences between Yoruba **[kp]** and Akan **[p]** were identified. Further, recognizing a fundamental truth of sound change, namely that sounds undergo change in natural classes, it was expected that there would be a similar correspondence between Yoruba **[gb]** and Akan **[b]** wherein Yoruba had retained the original consonant and Akan had undergone a process of develarization. This explanation is favorable due to the fourth implicational law, which states, "less common sounds tend to be less stable than common ones and are thus more likely to be lost or changed over time."

Implicit in hypothesizing this sound change for Akan, is the idea that such a change would begin a push chain. Based on the first implicational law the presence of a less common sound in a language implies that its more common counterpart will also be present. When a sound change occurs and one sound begins to approximate too closely another sound (i.e., its more common counterpart), one of two things happens. One is that, upon changing, the less common sound merges with the more common sound. The other is that the more common counterpart dissimilates from its encroaching neighbor to become another sound. This is essentially the nature of a push chain as each sound that moves in the consonant space encroaches on a neighboring sound which in turn dissimilates. Dissimilation causes the sound to in turn encroach on the space of another neighboring sound and so forth and so on.

The data, as presented below, supports the idea that this is the process that was undergone by Akan and, to a lesser extent, Yoruba.

The supposition of a push chain begs the question of what truly initiates this push chain. The answer that accounts for the most data is that there was a loss of a plosive/implosive distinction in Proto-Benue-Kwa. Stewart (2002), in his article entitled “The potential of Proto-Potou-Akanic-Bantu as a pilot Proto-Niger-Congo, and the reconstructions updated” justifies his reconstruction of implosives stating that “Although the putative cognates across the Fula-type languages and the Potou-Akanic-Bantu languages are very few, the eight Fula entries in Greenberg’s (1963: 13-24) Adamawa-Eastern comparative wordlist include two with (voiced) implosives, and both of these correspond to Proto-Potou-Akanic items with voiced implosives.” However, it is clear that there is no plosive to implosive distinction in modern-day Akan or Yoruba. It is posited that this loss of the plosive/implosive distinction that was retained in the Fula-type languages and the Adamawa-Eastern languages was truly the first trigger that started the push chain. This push chain is demonstrated clearly in Table 4.1 below both in terms of proto-phonemes and in words explaining the named natural classes that undergo change as a result of this initial push chain. The initial push posited is that when the implosives became plain, the plain sounds dissimilated in one particular way in Yoruba and in another way in Akan, thus explaining the recurrent and systematic C1 correspondences found between Akan and Yoruba. The comparative series below from 1.1 to 11.2 show that contemporary sound correspondences in the basic vocabulary of Akan and Yoruba give support to this analysis of what is presented here as the Proto-Benue-Kwa Push Chain. Immediately

below are the phonemes that begin with the loss of a plain/implosive distinction that cause Yoruba and Akan to arrive at **[kp]** and **[p]** respectively.

	Originally	Becomes	Reflex
Yoruba	***ƙp**	***kp**	**kp**
Akan	***ƙp**	***kp**	**p, b**

After the loss of the plain/implosive distinction Akan completely lost former labial-velars which were however retained in Yoruba. After the loss of the plain/implosive distinction, the original Yoruba **kp** was pushed as was the original Akan **p**. The reason why it is necessary to begin here is that, in this analysis of a push chain, this crucial sound shift is hypothesized as the reason why contemporary sound correspondences exist as they do between Akan and Yoruba. Thus the proto-phonemes are derived from an analysis of contemporary sound correspondences of basic vocabulary that support this idea of a push chain beginning with the loss of the plosive/implosive distinction retained in other branches of Niger-Congo. This hypothesis of a plain/implosive distinction and its loss leading to the initiation of a push chain is able to account for the contemporary data in a clear, patterned and systematic way. In the recognition of sound shifts in natural classes created by this push chain, data previously unaccounted for is understood in the context of a system of patterned changes to all affected natural classes. Further, this push chain has led to the discovery of previously neglected basic vocabulary sound correspondences that become evident in the context of the push chain and systematic and recurrent sound correspondences between Yoruba and Akan.

What are the arguments for and against alternative reconstructions?

The main difference between the reconstruction presented in this thesis and that of Stewart (2002) are the reconstructions of ***ƙp/*ƙʷ, *kp/*kʷ** and **ɠb/ɠʷ gb/gʷ** in allophonic distribution. Previously, Stewart reconstructed only ***ƙp ɠb** and ***kp gb**, he now only reconstructs ***ƙʷ ɠʷ** and ***kʷ gʷ**. Clearly, there are data that support the reconstruction of both. However, data from Yoruba and Akan point to phonological environments wherein the labial-velar and labialized-velar occur in Proto-Benue-Kwa. The identification of these environments is one of the contributions this thesis makes to the discourse of Proto-Benue-Kwa reconstruction. The allophonic distribution hypothesis follows from the second implicational law, which states that less common sounds have limited usage and distribution that do make use of them, as compared with common sounds. As mentioned previously, consonants of normal length are more common than those with the secondary articulations like velarization, palatalization, and labialization (although these are not always necessarily longer in terms of phonetic duration of segments). Thus it is not unexpected to discover that there was a limited usage and distribution of these sounds in Proto-Benue-Kwa. Evidence of this allophonic distribution is evident in the data from Akan and Yoruba, which shows that labialized velars occurred before high back vowels while labial-velars occurred elsewhere (thus making the labial-velars phonemic and the labialized velars allophones).

The plain/implosive distinction proposed by Stewart is retained because it accounts for the greatest amount of data. As mentioned above, Fula-type and Adamawa-Eastern groups point to a plain/implosive distinction. The assumption of

this distinction also accounts for data here wherein there are recurrent sound correspondences between, say, **t** in Yoruba and **t** in Akan while there is as extensive a list of sound correspondences in the basic vocabulary which involve Yoruba **t** and Akan **s**. There is no readily observable phonological environment that would predispose one to account for **s** in one context while accounting for **t** in another. However, we find such a pattern in each obstruent series wherein there is an identity between the Yoruba and Akan C1 and an equally extensive series wherein the Akan C1 diverges from this identity as a fricative. This is accounted for by proposing that one set of consonants is the putative reflex of the plain C1 while the other is attributable to the implosive C1. As mentioned, this type of correspondence between the Yoruba C1 on the one hand and the Akan C1 on the other hand is featured in the case of all obstruent comparative series. The plain/implosive distinction provides a tool to posit that the two series arose from the implosive **ƭ** in one instance and the plain **t** in the other instance. This analysis can then be extended to the other such cases of recurrent correspondences that fit the same pattern. There are only a few cases wherein we find a slight divergence from the expected pattern and overall this hypothesis is the simplest and most straightforward (i.e., loss of plain/implosive distinction and resultant push chain) that accounts for the most data as shown in section 4.1.5., Analysis of Data, below.

Other scholars, including Stewart have pointed to a possible fortis/lenis distinction, but as discussed in Chapter 2, Literature Review, this hypothesis has largely been abandoned due to broadening the scope of the analysis from Proto-Benue-Kwa to include other related language groups that maintain the plain/implosive distinction.

Section 1.1.3., entitled Significance of Research also provides a fuller discussion of this question of arguments for and against alternative reconstructions and the ideological strains from which these alternatives arise.

Which reconstructions can be thought of as certain (and why); and which reconstructions are doubtful (and why and to what degree)?

The reconstructions that are most certain are the obstruents across the board. This is because they account for the available data and fit the expected pattern of the push chain with very little exception. The pattern established by the push chain is such that it even led to the discovery of previously unrecognized recurrent sound correspondences in the basic vocabulary of Akan and Yoruba. The data, with very little exception, fit established patterns of sound change. There is very little variation between the expected phoneme and the phoneme that actually occurs in Akan and Yoruba. This is expected because of the foundational building block in historical linguistics that sound change is overwhelmingly regular and that sounds change in natural classes. We find sounds changing in natural classes in a regular, patterned and systematic ways across the board. Thus the reconstructions of the obstruents are most certain in that they account for the data from Akan and Yoruba and follow natural patterns of sound change. In fact, the firm establishment of this push chain could have implications as vast as that of Grimm's Law for reconstruction in African historical linguistics.

The reconstructions of the sonorants are less certain as there is no discernible push chain with which to make predictions based on putative reflexes in Yoruba and

Akan. This is presumably due to the lack of implosive sonorants in Proto-Benue-Kwa. There were however extensive recurrent sound correspondences between Akan and Yoruba. The device appealed to in reconstructing proto-phonemes in these instances was simply the application of principles of natural sound change and the identification of patterns among sonorants.

The nasals, however were relatively easy to reconstruct as there is an extensive identity relation between the nasals of Akan and those of Yoruba.

Also included for reference are the corresponding lexical items in Guthrie's Proto-Bantu in which we find recurrent and systematic correspondences with the Yoruba and Akan lexical items. Among the Proto-Bantu items included are those used by Stewart in his reconstructions as well as those that lend credence to the reconstructions presented here.

Where there is uncertainty, the data of other scholars has been evaluated in the interest of attempting to find other correspondences that fit in the system of patterned changes postulated in this thesis.

What effort, if any, has been made to screen out borrowings and other distorting data?

The first and primary effort at screening out borrowings and other distorting data was in the use of basic vocabulary in the form of the Swadesh list. In this compilation of data, it is proverbially useful to begin with data that are not typically borrowed interlinguistically. From such an effort, patterns can be identified and expanded upon to other basic vocabulary or which display similar patterns of sound correspondences. As the focus of this thesis is C1 reconstruction, it is acknowledged that as the V1, C2 and V2 (In forthcoming research, a CVCV basic Proto-Benue-Kwa

root will be posited) are reconstructed we can become even surer of cognates and, beyond the basic vocabulary filter, any non-cognates can be filtered out. However, it should similarly be noted that with the basic vocabulary upon which this study is based, patterns of recurrent sound correspondences have been established. Most of these sound correspondences in the basic vocabulary find parallel in the work of other scholars such as that of Mukarovsky, Greenberg, Stewart and others. Prominent examples are those such as ‘three’, ‘death’ and others. After these more certain correspondences were established, it was only then that a concerted effort was made to expand to find other lexical items that fit the same pattern of sound correspondences to lend further strength and credence to relatively uncontroversial and even canonical comparative pairs.

Again, if necessary this list may be narrowed down back to the original pairs in the basic vocabulary if, upon further analysis, any pairs are determined to not be cognate. Regardless of doing so, whether one or fifty, any data would be all that would be necessary to establish the patterns of sound change put forward in this thesis. Also, one should remain mindful that although perhaps more convincing, a long list is not necessary to establish patterns of sound change in natural classes. One pair will do.

This comparison is also based on a relatively large data base of basic vocabulary. This is because if we discover striking similarities in pronunciation and meaning in a large number of words, the possibility that these similarities are due to chance becomes rather remote (Hock: 460-461). In addition to gleaning information from a large data base, certain types of words that are notoriously unreliable for

establishing genetic relationship, such as onomatopoeia and nursery words have been eliminated.

In the interest of eliminating similarities due to linguistic contact, basic vocabulary has been focused upon rather than limited spheres of the vocabulary, especially the sphere of technical vocabulary. The goal is to identify similarities that pervade the whole lexicon, including the basic vocabulary. This is due to the fact that borrowing has the least effect in the area of basic vocabulary including closed lexical categories (Hock 463). For this reason, resources such as the Swadesh List named after and originally developed by renowned linguist Morris Swadesh, have been indispensable to this study. As mentioned, this list necessarily includes closed class items such as prepositions, conjunctions, determiners/pronouns, complementizers, and auxiliaries/modals. In this study, for example, from the outset correspondences between Akan and Yoruba pronouns were identified such as the following:

Yoruba	**Akan**
ìwɔ/o *'you'*	**wo** *'you'*
w̃õ *'they/them'*	**wɔ̃ŋ** *'they/them'*
èmi/mo/mi/ŋ *'I/me'*	**mi/mɪ** *'I/me'*

As opposed to open class categories such as nouns, verbs, and adjectives/adverbs, membership in closed class categories is limited and coinages are extremely rare. Also, the first correspondences were found in low numerals, basic colors, and other nouns and verbs that are unlikely to be borrowed etc. The sound correspondences occurring in such basic vocabulary items provided the foundation

upon which this analysis and the identification of subsequent comparative pairs are based.

After the identification of recurrent sound correspondences, items and systems have been reconstructed wherein postulated linguistic changes are natural and postulated sound changes are regular, in conformity with the regularity principle which states that sound change is overwhelmingly regular (466).

Finally, the reconstruction does not violate Occam's Razor, a maxim fundamental to all scientific inquiry, which states, "'Entities [in an argument] should not be multiplied beyond necessity.' In this reconstruction, such 'entities' are (i) reconstructed items, and (ii) changes required to convert these items into the forms attested in the descendant languages" (468).

This reconstruction will be further refined and any and all false cognates will be further screened out as the vowels and C2 of the bases are reconstructed so that patterned and systematic sound changes can be identified as opposed to mere chance similarities (which have been guarded against by the methodology of data collection and analysis outlined above).

4.1.5. Analysis of Data

The data presented below is intended to identify C1 correspondences and to present a plausible schema of diachronic sound changes from which these putative reflexes may have been derived. The stop series is conceived of as essentially a push chain wherein implosive stops become plain stops. In the case of Yoruba, the implosive labial-velars become plain labial-velars whereas in Akan, the implosive labial-velars become plain labial stops. In Yoruba this change causes pre-existing

plain labial-velars to become voiceless labiodental fricatives. In Akan, however, plain labial-velars become plain labial stops, merging with the plain labial stops which came about as a result of the initial change wherein implosive labial-velars became plain stops. In Akan, in both cases of implosive labial-velars and plain labial-velars, the putative reflexes of these sounds are conceived of as having undergone a process whereby the velar component of all labial-velar sounds was lost unconditionally. In Yoruba, the implosive labial-velar stops becoming plain labial-velar stops causes existing labial-velar stops to first become plain labial stops and then labiodental fricatives. In the case of the Yoruba plain voiceless labial-velar stop, this two-step process is posited because of the fact that although a change to a plain voiceless labial stop is expected in this push chain, the voiceless labial stop does not occur in Modern Yoruba leaving a gap of sorts in the phonological inventory. However, there is a clear series of correspondences between the voiceless labiodental fricative of Yoruba and the voiceless labial stop of Akan. As is posited for the voiceless labiodental series the voiced labiodental stop also becomes a labiodental fricative. However, rather than the voiced labiodental fricative which might be expected but does not occur in the language, a voiceless labiodental fricative again occurs alongside a voiced labial stop in Akan. It is a possibility for the voiced labial-velar, **gb**, to have become the voiced labial stop, **b**, which, unlike its voiceless counterpart, **p**, does occur in the Yoruba language. However, based on the data, it is posited that in Yoruba, the plain labial-velars, upon displacement from the encroaching implosive labial-velars, became fricatives.

The labialized velars, which occur in complementary distribution with the labial-velar series paint a similar picture. In the case of Yoruba, the loss of the plain

versus implosive distinction causes the implosive labialized velars to become first plain labialized velars and then plain velars. This is juxtaposed with the Akan implosive labialized velars which become plain labialized velars and then voiced labial-velar approximants as occurring in contemporary Akan. This change in the implosive labialized velars is consistent with the process that occurs in the case of the implosive labial-velars wherein the Akan labial-velars lose the velar element but retain the labial quality. In Yoruba plain labialized velars subsequently become voiced labial-velar approximants while in Akan plain labialized velars are retained. This is analogous to the process in Yoruba whereby the labial-velars become [+continuant] and the process in Akan whereby the labial-velars retain their [+obstruent] quality as well as their [+labial] quality.

The voiced and voiceless implosive stops become plain stops except in the case of the implosive voiceless labial stop ɓ̥ which becomes a plain voiceless labiodental fricative, **f**, both in Yoruba and Akan. In Yoruba and Akan the plain voiceless labial stop, **p**, is expected although it is posited that because this sound does not occur in Yoruba, it manifests in all cases as the plain voiceless labiodental fricative, **f**. In Akan the occurrence of **f** in this context and other contexts is attributed to the supposition that the only **p** that occurs in the language are the reflexes of an original implosive or plain voiceless labial-velar stop of Proto-Benue-Kwa which displace all other voiceless labial stops.

In reference to reconstructing implosives in cases where there appears to be an identity in Akan and Yoruba, there are two primary motivations for doing so. One is the push chain that is being hypothesized wherein the implosive to plain distinction is seen as being the first step in the process. The second motivation is that this

implosive versus plain distinction helps to capture the array of correspondences that are evident between Akan and Yoruba which appear to be attributable to some sort of phonemic or at the very least allophonic variation existing in Proto-Benue-Kwa. Although reconstructing an implosive stop for plain stop reflexes may on the surface seem to go against Occam's Razor, in addition to providing an initial catalyst for the hypothesized push chain, it also contributes to the overall economy of the system. In the large majority of cases with the primary exception being that of voiceless labial stops, positing an implosive stop in Proto-Benue-Kwa requires only one change to result in the identical plain stop found in Akan and Yoruba. Conversely, positing the implosive where we are currently reconstructing a plain stop would require several changes (usually on the Akan side), which would be difficult to motivate as a result of conditioning environment or any other reason. This is to say, it would be difficult to identify why an original implosive would undergo such changes. Also, if the implosive were to be reconstructed where plain stops are currently being reconstructed, there would be no push chain by which to arrive at a satisfactory explanation of the stop reflexes in the data.

Although it is possible that the plain (non-implosive) and marked (implosive) consonants posited here were not necessarily a plain to implosive distinction in Proto-Benue-Kwa, there is a need for some form of plain to marked distinction which would account for the correspondences in the data. In the past this has been hypothesized as a fortis versus lenis distinction or an ejective versus non-ejective distinction. The reason why this is currently posited as an implosive versus plain distinction is as a result of forthcoming research on Fula-type groups and Potou groups that are posited as having retained an original plain to implosive distinction. This plain to implosive

distinction is seen as traceable to a more ancient protolanguage providing evidence of the higher level of unity between West African languages and Bantu languages as posited by Greenberg, Mukarovsky and others and referred to above in Chapter Two.

In further exploring the push chain started by implosives becoming plain stops, in Yoruba originally plain stops merge with plain stops created by the shift of implosive stops to plain stops in all cases with the exception of the voiceless labial stop **p** which becomes the voiceless labiodental fricative **f**. In Akan the voiced stops do not merge with the stops produced by implosives becoming plain stops. They rather continue the push chain becoming voiceless stops with the exception of **b** which becomes the voiceless labiodental fricative, **f**. Displaced voiced stops in turn become fricatives with the voiceless velar stop, **k**, becoming the glottal fricative **h**, the voiceless alveolar stop, **t**, becoming the voiceless alveolar fricative **s**, and the voiceless labial stop, **p**, becoming the voiceless labiodental fricative, **f**, as expected.

In both Yoruba and Akan, clear correspondences are evident wherein a nasal at labial and alveolar places of articulation retain their identities as nasals at the same place of articulation.

In the case of liquids, Stewart's research has been largely followed in his supposition that a number of Akan nasals and rhotics are attributable to an original lateral that occurred both as a nasalized or plain consonant. When the original lateral was nasalized, its reflex occurs in Yoruba as a nasalized rhotic. The lateral thus provides a middle ground which accounts for occurrences of nasalized liquid to nasal correspondences between Yoruba and Akan. Elsewhere, a plain lateral becomes a plain rhotic in Yoruba and Akan as is also the case in Stewart's research on Akan

wherein he posits that the rhotic in contemporary Akan is the putative reflex of the plain lateral in the ancestral language from which Akan and Yoruba are descended.

There are however a set of correspondences which occur between the rhotic of Yoruba and the voiceless alveolar stop, **t**, and in certain environments, the voiceless alveolar fricative, **s**, of Akan.

There are also a number of correspondences of fricatives between Akan and Yoruba, particularly the voiceless alveolar fricative, **s**, and the voiceless glottal fricative, **h**. Thus it is posited that fricatives did indeed occur in Proto-Benue-Kwa and both **s** and **h** are reconstructed.

Affricates are also reconstructed in Proto-Benue-Kwa as the forerunners to a subset of fricatives that occur in Akan and Yoruba.

Two approximants are also reconstructed for Proto-Benue-Kwa due to the high incidence of one-to-one correspondences across Akan and Yoruba of both the voiced palatal approximant, **j**, and the voiced labial-velar approximant **w**. These changes are further explored in the analysis of data provided below.

Table 4.1: The Proto-Benue-Kwa Push Chain

	Originally	Becomes	Reflex	Originally	Becomes	Reflex
Yoruba	***ƙp**	***kp**	**kp**	***ƙ**	***k**	**k**
Akan	***ƙp**	***kp**	**p, b**	***ƙ**	***k**	**k, tɕ**
Yoruba	***ɠb**	***gb**	**gb**	***ƭ**	***t**	**t**
Akan	***ɠb**	***gb**	**b**	***ƭ**	***t**	**t**
Yoruba	***ƙʷ**	***kʷ**	**k**	***ƥ**	***p**	**f**
Akan	***ƙʷ**	***kʷ**	**w**	***ƥ**	***p**	**f**
Yoruba	***ɠʷ**	***gʷ**	**g**	***g**	***g**	**g**
Akan	***ɠʷ**	***gʷ**	**w**	***g**	***k**	**k**
Yoruba	***kp**	***kp**	**f**	***d**	***d**	**d**
Akan	***kp**	***kp**	**p**	***d**	***t**	**t, tɕ, s**
Yoruba	***gb**	***gb**	**f**	***b**	***b**	**b**
Akan	***gb**	***gb**	**b**	***b**	***p**	**f**
Yoruba	***kʷ**	***kʷ**	**w**	***k**	***k**	**k**
Akan	***kʷ**	***kʷ**	**kʷ**	***k**	***h**	**h**
Yoruba	***gʷ**	***gʷ**	**w**	***t**	***t**	**t**
Akan	***gʷ**	***gʷ**	**gʷ**	***t**	***s**	**s**
Yoruba	***ɠ**	***g**	**g**	***p**	***p**	**f**
Akan	***ɠ**	***g**	**g**	***p**	***f**	**f**
Yoruba	***ɗ**	***d**	**d**	***m**	***m**	**m**
Akan	***ɗ**	***d**	**d**	***m**	***m**	**m**
Yoruba	***ɓ**	***b**	**b**	***n**	***n**	**n**
Akan	***ɓ**	***b**	**b**	***n**	***n**	**n**

	Originally	Becomes	Reflex
Yoruba	***l**	***l**	**r**
Akan	***l**	***l**	**r**
Yoruba	***l̃**	***l̃**	**r̃**
Akan	***l̃**	***l̃**	**n**
Yoruba	***r**	***r**	**r**
Akan	***r**	***t**	**t, s**
Yoruba	***s**	***s**	**s**
Akan	***s**	***s**	**s**
Yoruba	***h**	***h**	**h**
Akan	***h**	***h**	**h**
Yoruba	***c**	***ʃ**	**ʃ**
Akan	***c**	***ʃ**	**s**
Yoruba	***ɟ**	***ʄ**	**Ø**
Akan	***ɟ**	***ʄ**	**s**
Yoruba	***j**	***j**	**j**
Akan	***j**	***j**	**j**
Yoruba	***w**	***w**	**w**
Akan	***w**	***w**	**w**

The Proto-Benue-Kwa Push Chain in Words

Yoruba	implosive labial-velar → plain labial-velar
Akan	implosive labial-velar → plain labial stop
Yoruba	implosive labialized velar → plain velar stop
Akan	implosive labialized velar → voiced labial-velar approximant
Yoruba	plain labial-velar → voiceless labiodental fricative
Akan	plain labial-velar → plain labial stop
Yoruba	plain labialized velar → voiced labial-velar approximant
Akan	plain labialized velar → plain labialized velar
Yoruba	implosive voiced stop → plain voiced stop
Akan	implosive voiced stop → plain voiced stop

Yoruba	implosive voiceless stop → plain voiceless stop
Akan	implosive voiceless stop → plain voiceless stop
	but
Yoruba	implosive voiceless labial stop →plain voiceless labiodental fricative
Akan	implosive voiceless labial stop → plain voiceless labiodental fricative
Yoruba	plain voiced stop → plain voiced stop
Akan	plain voiced stop → plain voiceless stop
	but
Akan	plain voiced labial stop → plain voiceless labiodental fricative
Yoruba	plain voiceless stop → plain voiceless stop
Akan	plain voiceless stop → plain voiceless fricative
	but
Yoruba	plain voiceless labial stop → plain voiceless labiodental fricative
Yoruba	nasal [α place] → nasal [α place]
Akan	nasal [α place] → nasal [α place]
Yoruba	lateral → rhotic
Akan	lateral → rhotic
Yoruba	nasalized lateral → nasalized rhotic
Akan	nasalized lateral → nasal
Yoruba	rhotic → rhotic
Akan	rhotic → stop/fricative
Yoruba	fricative → fricative
Akan	fricative → fricative
Yoruba	affricate → fricative
Akan	affricate → fricative
	but
Yoruba	voiced palatal affricate → Ø
Yoruba	approximant [α place] → approximant [α place]
Akan	approximant [α place] → approximant [α place]

Table 4.2: Benue-Kwa initial consonant system (C1)

	labial	alveolar	palatal	velar	labial-velar/labialized
plain stop [-vc]	**p**	**t**	**c**	**k**	**kp/k^{w}**
implosive stop [-vc]	**ɓ**	**ƭ**		**ƙ**	**ƙp/ƙ^{w}**
plain stop [+vc]	**b**	**d**	**ɟ**	**g**	**gb/g^{w}**
implosive stop [+vc]	**ɓ**	**ɗ**		**ɠ**	**ɠb/ɠ^{w}**
nasal	**m**	**n**			
fricative		**s**		**h**	
approximant			**j**		**w**
liquids		**l̃/ l**			
		r			

Implosive Labial-Velars

*ƙp

1.1 pBK ***ƙp**

Yoruba

Implosive → Plain Labial-Velar

***ƙp → *kp**

C1	→	**C1**
[+labial]		[-implosive]
[+velar]		
[+implosive]		

Labial-Velar → Labial-Velar

***kp → kp**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[+velar]

Akan

Implosive → Plain Labial-Velar

***ƙp → *kp**

C1	→	**C1**
[+labial]		[-implosive]
[+velar]		
[+implosive]		

Labial-Velar → Labial Stop

***kp → p** or **k → Ø / kp**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[-velar]

kpá *'to be bald'*	**pà** *'to be bald'*
kpa *'to rub'*	**pà** *'to rub/wipe'*
kpa *'to break hard nut/divide calabash into halves'*	**paí** *'to crack/divide'*
kpa *'to extinguish fire'*	**pa-tá** *'to extinguish fire'*
kpo *'to knead'*	**pɔ-tɔ́/fɔ-tɔ́** *'to knead'*
kpɔ̀ *'to throw up/to vomit'*	**pò/pù** *'to throw up/to vomit'*
kpé *'to be complete'*	**pɛ́** *'to be complete'*
ikpĩ *'matter in corner of eyes'*	**mpí** *'matter in corner of eyes'*
kpĩ *'to end'*	**pĩ̀m** *'to end'*
	Stop [-vc] → Stop [+vc]
	p → b
	C1 → C1 / V __ V [-vd] [+vd] [-son]
ɔ̀kpɛ *'palm tree'*	**abɛ́** *'palm tree'*
akpá *'arm'*	**abá** *'arm'*
èèkpo *'bark/peel'*	**ɔbɔ́n** *'bark'*
Proto-Bantu	**Common Bantu**
***-pádá-, *-pánɟà** *'baldness'*	***-bádá-, *-pádá-, *-pánjà** *'baldness'*

***-pàk-**
‘to rub’

***-pêp-**
‘to wipe’

***-pànd-**
‘to split’

***-pɔ́t-**
‘to twist a soft thing’

***-pu̱dɔ̀-**
‘foam’

***-pi̱nà**
‘pus’

***-bádɛ̀**
‘palm tree’

***-bi̱dà**
‘oil palm’

***-bɔ́kɔ̀**
‘arm’

***-pàk-**
‘to rub’

***-píp-**
‘to wipe’

***-pac-, *-pànd-, *-bàd-**
‘to split’

***-pót-**
‘twist’

***-pódù̱-, *-pu̱dɔ̀-**
‘foam’

***-pi̱nà**, ***-pi̱dà**, ***-pi̱nyà**
‘pus’

***-bádè**
‘palm tree’

***-bi̱dà**, ***-bá**
‘oil palm’

***-bókò**
‘arm’

*ɠb

1.2 pBK ***ɠb**

Yoruba

Implosive → Plain Labial-Velar

***ɠb → *gb**

C1 → C1
[+labial] [-implosive]
[+velar]
[+implosive]

Labial-Velar → Labial-Velar

C1 → C1
[+labial] [+labial]
[+velar] [+velar]

***gb → gb**

àgbàdo
'maize'

àgbɔ̀n
'chin'

ɔgbà
'fence'

ɛ̀gbĩ̀
'filth/dirt'

Proto-Bantu

***-báŋgá**
'jaw'

Akan

Implosive → Plain Labial-Velar

***ɠb → *gb**

C1 → C1
[+labial] [-implosive]
[+velar]
[+implosive]

Labial-Velar → Plain Stop

C1 → C1
[+labial] [+labial]
[+velar] [-velar]

***gb → b**

æbŭró
'maize'

æbodʑí
'chin'

ɛbáŋ
'fence'

ebĩ́ŋ
'dirt/muck/excrement'

Common Bantu

***-bángá**
'jaw'

***-gömbö**
'fence'

***-gùmbù**
'fence'

***-bi̱dɔ̀**, **bi̱ndɔ̀**
'dirt, filth'

***-bi̱dò**, **bi̱ndu**
'dirt, filth'

Implosive Labialized Velars

*ɠʷ

1.3 pBK ***ɠp** → ***ɠʷ** / ____ **V**
[+back]
[+round]

[+tense]
[+high]

Yoruba

Implosive → Plain Labialized Velar

***ɠʷ → *kʷ**

C1 → C1
[+labial] [-implosive]
[+velar]
[+implosive]

Labialized Velar ➔ Velar

***kʷ → k** / ____ **V**
[+back]
[+round]
[+tense]
[+high]

C1 → C1
[+labial] [-labial]
[+velar] [+velar]

Akan

Implosive → Plain Labialized Velar

***ɠʷ → *kʷ**

C1 → C1
[+labial] [-implosive]
[+velar]
[+implosive]

Labialized Velar ➔ Labial

***kʷ →** **w** or **k** → **Ø / kʷ**

C1 → C1
[+labial] [+labial]
[+velar] [-velar]

kú
'to die'

i-kú
'death'

i-kɔ́
'cough'

wú
'to die'

o-wú
'death'

ɔ-wáw
'cough'

Proto-Bantu

***-kṵ́-**
'die'

***-kṵ́**
'death'

***-kɔ́c-**
'to cough'

Common Bantu

***-kṵ́-**
'die'

***-kṵ́**
'death'

***-kóc-**, ***-kódud-**, ***-kópud-**
'to cough'

---

*ɠʷ

1.4 pBK ***ɠb** → ***ɠʷ** / ____ **V**
[+back]
[+round]

[+tense]
[+high]

Implosive → Plain Labialized Velar

***ɠʷ** → ***gʷ**

C1 → **C1**
[+labial] [-implosive]
[+velar]
[+implosive]

Implosive → Plain Labialized Velar

***ɠʷ** → ***gʷ**

C1 → **C1**
[+labial] [-implosive]
[+velar]
[+implosive]

Labialized Velar ➔ Velar

***g^{w} → g / ___ V**
[+back]
[+round]
[+tense]
[+high]

C1	→	**C1**
[+labial]		[-labial]
[+velar]		[+velar]

gű
'to pound'

gű
'to stab/to pierce'

Labialized Velar ➔ Labial

***g^{w} → w** or **g → Ø / g^{w}**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[-velar]

wɔ̀
'to pound'

wɔ̀(w)
'to stab/to pierce'

Plain Labial-Velars

*kp

2.1 pBK ***kp**

Yoruba

Labial-Velar → Labial Stop

***kp → *p**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[-velar]

Labial Stop → Labial Fricative

***p → f**

C1	→	**C1**
[+labial]		[+labial]
[+stop]		[+fricative]

Akan

Labial-Velar → Labial Stop

***kp → *p** or **k → Ø / kp**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[-velar]

Labial Stop → Labial Stop

***p → p**

C1	→	**C1**
[+labial]		[+labial]
[+stop]		[+stop]

fá *‘to scrape’*	**pɔ̀w** *‘to scrape’*
fá *‘to wipe’*	**pà** *‘to wipe’*
fà *‘to draw’*	**pà** *‘to draw’*
fɛ́ *‘to like/want’*	**pɛ̀** *‘to like/want’*
fààfá *‘a coarse mat’*	**apãã́** *‘a coarse mat’*
féfé *‘cleanly’*	**péféé** *‘clearly’*
fĩ́ *‘to smoke’*	**pũ̀n** *‘to smoke’*
afɛ́fɛ́ *‘wind’*	**ɔpɛ́** *‘harmattan wind’*
Proto-Bantu	**Common Bantu**
	***-yènd-** *‘desire’*
***-yôkʲ̀-** *‘smoke’*	***-yúkʲ̀** *‘smoke’*
***-pêp-** *‘to wipe’*	***-pʊ̀ʊ̀pud-**, ***-píp-** *‘to wipe’*
***-pɛ́pɔ̀**, ***-pööpɔ̀** *‘wind’*	***-pépò**, ***-pèèpè** *‘wind’*

*gb

2.2 pBK ***gb**

Yoruba

Labial-Velar → Labial Stop

***gb** → **b**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[-velar]

Labial Stop → Labial Fricative

***b** → **f**

fɔ́
'break'

Proto-Bantu

***-bu̱n-**
'to break'

Akan

Labial-Velar → Labial Stop

***gb** → ***b** or **g → Ø / *gb**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[-velar]

Labial Stop → Labial Stop

***b** → **b**

bɔ̀
'break'

Common Bantu

***-bu̱n-**
'to break'

Plain Labialized Velars

*k^{w}

2.3 pBK ***kp** → ***k^{w}** / ____ **V**
[+back]
[+round]

[+tense]
[+high]

Yoruba

Labialized Velar → Labial

***k^{w}** → ***w**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[-velar]

Labial → Labial-Velar Approximant

***w** → **w**

***k^{w}** → **w**

wà
'to be/to exist'

Akan

Labialized Velar → Labialized Velar

***k^{w}** → **k^{w}**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[-velar]

***k^{w}** → ***k^{w}**

ŋ−k^{w}ã́
'life'

*g^{w}

2.4 pBK ***gb** → ***g^{w}** / ____ **V**
[+back]
[+round]

[+tense]
[+high]

Yoruba

Labialized Velar → Labial

***g^{w} → w**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[-velar]

Labial → Labial-Velar Approximant

***w → w**

wɛ̀
'to bathe'

Akan

Labialized Velar → Labialized Velar

***g^{w} → *g^{w}**

C1	→	**C1**
[+labial]		[+labial]
[+velar]		[+velar]

g^{w}ar[-]ɪ́
'to bathe'

Implosive Voiced Stops

*ɠ

3.1 pBK ***ɠ**

Yoruba

Implosive Stop [+vc] → Plain Stop [+vc]

***ɠ → g**

C1	→	**C1**
[+velar]		[-implosive]
[+implosive]		

àgò
'call to enter'
àga
'seat'
àgùtẩ

Akan

Implosive Stop [+vc] → Plain Stop [+vc]

***ɠ → g**

C1	→	**C1**
[+velar]		[-implosive]
[+implosive]		

æ̀gòò
'call to enter'
aguá
'seat'
oguã̂ŋ/odʑuã̂ŋ

‘sheep’

‘sheep’

Proto-Bantu

Common Bantu

***gú**, ***-gʊ́**, ***-kòdò**, ***-kòòkò**, ***-ŋkògò**
‘sheep’

*ɗ

3.2 pBK ***ɗ**

Yoruba

Implosive Stop [+vc] ➔Plain Stop [+vc]

***ɗ → d**

C1 → C1
[+velar] [-implosive]
[+implosive]

àdá
‘cutlass’

di
‘to become’

dé
‘to arrive’

dà
‘to become’

ìdɔ̀tí
‘filth’

Akan

Implosive Stop [+vc] ➔Plain Stop [+vc]

***ɗ → d**

C1 → C1
[+velar] [-implosive]
[+implosive]

àdárɪ́
‘cutlass’

dì
‘to become’

dù
‘to arrive’

danɪ́
‘to become’

dɔ̀tɪ́
‘dirt’

Proto-Bantu

***-dë**
‘to be’

Common Bantu

***-dì**, ***-dɻ̀**
‘to be’

***-bí̩dɔ̀**, ***-bì̩ndɔ̀**
'dirt'

***-bí̩dò**, ***-bì̩ndù**
'dirt'

*ɓ

3.3 pBK ***ɓ**

Yoruba

Implosive Stop [+vc] ➔Plain Stop [+vc]

***ɓ → b**

C1 → C1
[+velar] [-implosive]
[+implosive]

bù
'to break off'

ibú
'deepest part of water'

bí
'to ask'

biribiri
'jet black'

bò
'to cover'

bá
'to help'

ibi
'place'

ibi
'evil'

bɔ̀
'to come'

òbò
'vagina'

Akan

Implosive Stop [+vc] ➔ Plain Stop [+vc]

***ɓ → b**

C1 → C1
[+velar] [-implosive]
[+implosive]

bu
'to break'

ebúnú
'deepest part of water'

bisá
'to ask'

bírí
'jet black'

bɥɪá
'to cover'

bʊá
'to help'

bɪaɪ
'place'

bɔní
'bad'

bà
'to come'

boo
'euphemism for vagina'

abo *‘female’*	**ɔbáá** *‘woman’*
ìbòde *‘gate’*	**abóbo** *‘gate’*
bɔ *‘to worship’*	**bɔ** *‘to worship’*
àbɛ́bɛ̀ *‘palm fan’*	**bérɛw** *‘leaves of oil palm’*
Proto-Bantu	**Common Bantu**
***-bʉ́n-**, ***bʉ́nɟ** *‘to break’*	***-búd-**, ***-bʉ́g-**, ***-bʉ́n-**, ***-bʉ́nj-** *‘to break’*
***-bôôdʲ-** *‘to ask’*	***-búúdʲ-**, **yʲípud-** *‘to ask’*
	***-pʲínd-**, -**pʲ̀ì̀p-** *‘to become Black’*
***-bʲídɔ̀** *‘soot’*	***-bʲídò** *‘soot’*
***-bê** *‘bad’*	***-bí** *‘bad’*
	***-yò** *‘female genitals’*
***-bádɛ̀**, ***-bʲídà** *‘palm frond’*	***-bádè**, ***bànjà** *‘palm frond’*

Implosive Voiceless Stops

*ƙ

5.1 pBK ***ƙ**

Yoruba

Implosive Stop [-vc] ➔ Plain Stop [-vc]

***ƙ**	→	**k**
C1	→	**C1**
[+velar]		[+velar]
[-vc]		[-vc]

i-kú
'death'

ìkuukù
'cloud'

ìkuukù
'cloud'

kúdúrú
'fist'

eku
'rat'

èkúté
'mouse'

akùkɔ
'cock'

ìkɔ̀kɔ̀
'corner'

kẩ
'touch'

kà
'to read/to count'

Akan

Implosive Stop [-vc] ➔ Plain Stop [-vc]

***ƙ**	→	**k**
C1	→	**C1**
[+velar]		[+velar]
[-vc]		[-vc]

kṵ̃m/kṵ̃
'to kill'

kusukúùkúù
'fog'

omṵ̃nṵ̃nkṵ̃m
'cloud'

kutuku/kuturukú
'fist'

ekúsie
'rat'

ekúsie
'rat'

akúkɔ́
'chicken'

kʊkʊá
'corner'

kẩ
'touch'

kẩŋ
'to read/to count'

ɔ̀kã̀
‘one’

ɔ̀kã
‘one’

ɔ̀ʃù-ká
‘headpad’

kù
‘to remain’

kékeré
‘small’

ɔkə̀̃
‘*heart’*

kókó
‘small hard particle’

okó
‘penis’

akɔ
‘male’

ɔkɔ
‘husband’

ɔkʊ̀rĩ̀
‘man’

kɔrɔdɔ
‘bent/crooked’

kéré
‘small/little’

Yoruba

ɔ̀kɛ́rɛ́

ɛ̀kõ̀
‘one’

-kãŋ
‘first’

ká-hiri
‘headpad’

kà
‘to remain’

kakĕrá
‘small’

akʊ̃mə̃́/kónə̰̀nə̀̃
‘heart’

kóko
‘small hard particle’

kɔtí
‘penis’

kɔtí
‘penis’

okʊ̋nʊ̋
‘husband’

okʊ̋nʊ̋
‘man’

kurʊ̃́-[m]
‘bent/crooked’

kV / ___ **t, s**
[+high]
[+front]

kítíkítí
‘small/little’

Akan

***k** → **ʧ** / ___ V1
[+high]
[+front]

atʃíríítʃí

‘squirrel’

kí
‘to greet’

kì
‘to press’

Proto-Bantu

***-kʉ́-**
‘die’

***-kʉ́**
‘death’

***-köŋgô**
‘fog’

***-pôkö**
‘rat’

***-kôkô**, **côcô**
‘chicken’

***-táŋg-**
‘to read/to count’

***-mɔ́**
‘one’

***-kátà**
‘headpad’

***-kɛ́**
‘small’

***-kɔ́dɔ̀**, ***-kʉ́bà**
‘breastbone/chest’

***-kʉ́mb**, ***-kɔ̀tam-**
‘bend/bent’

Proto-Bantu

***-cêndê**

‘squirrel’

tɕɪá
‘to greet’

tɕɪ̈̀
‘to press’

Common Bantu

***-kʉ́-**
‘die’

***-kʉ́**
‘death’

***-kùŋgú**, ***-kùŋgúgú**
‘fog’

***-púkù**, ***-kòcùè**
‘rat’

***-kókó**, ***-cúcú**, ***-kúkú**
‘chicken’

***-táŋg-**
‘to read/to count’

***-mócà**
‘one’

***-kátà**
‘headpad’

***-ké**, ***-kéékέ**
‘small’

***-kódò**, ***-kʉ́bà**
‘breastbone/heart’

***-kómb-**, ***-kòtam-**
‘bent/crooked’

Common Bantu

***-cíndí**

'squirrel'

'squirrel'

***-kʃ́nd-**
'to press'

***-kʃ̀nd-**
'to press'

*ƭ

5.2 pBK ***ƭ**

Yoruba

Implosive Stop [-vc] ➔ Plain Stop [-vc]

***ƭ ➔ t**

C1	➔	**C1**
[+alveolar]		[+alveolar]
[-vc]		[-vc]

etí
'ear'

etí
'ear'

tú
'to dig up'

tòrò
'smooth'

tóbi
'big'

ta
'to shoot'

ta
'to shoot'

ta
'to kick'

tɛ̀
'to step on'

itɔ́
'spittle'

tutɔ́

Akan

Implosive Stop [-vc] ➔ Plain Stop [-vc]

***ƭ ➔ t**

C1	➔	**C1**
[+alveolar]		[+alveolar]
[-vc]		[-vc]

tié
'to listen'

tɪ̀
'to hear'

tù
'to dig up'

tŏro
'smooth'

topé
'huge'

tò
'to shoot'

ɛtá
'bow'

tɪá
'to kick'

tɪá
'to step on'

n-tæ-sú (-sú: water)
'spittle'

tò

'to spit'	*'to spit'*
tà *'to sell'*	**tɔ̀̀ŋ** *'to sell'*
tĩrĩ *'thin'*	**tɪ́áá** *'thin'*
tààrà *'straight'*	**tɪ̀̀ɪ̀** *'straight'*
Proto-Bantu	**Common Bantu**
***-tô** *'ear'*	***-tó**, ***-túé** *'ear'*
***-tɭ́m-** *'to dig up'*	***-tɭ́m-** *'to dig up'*
***-tág-**, ***-dác-** *'to shoot'*	***-dác-** *'to shoot'*
***-tá** *'bow'*	***-tá** *'bow'*
***-dëàt-** *'to tread'*	***-dìàt-** *'to tread'*
***-tɛ́- *-tá-** *'spittle'*	***-tá-**, ***-té-**, ***-tí-** *'spittle'*
***-tɥ́-** *'to spit'*	***-tɥ́-**, ***-tɥ́ɥ́j** *'to spit'*
***-tég-** *'to buy'*	***-tég-** *'to buy'*
	***-tɥ̀ŋg-** *'thin'*
***-dödam** *'straight'*	***-dùŋg** *'straight'*

***-tụ̀mb-**
'to roast'

***-tág-**
'to throw'

***-tụ̀mb-**
'to roast'

***-tá**
'to throw'

*ɓ

5.3 pBK ***ɓ**

Yoruba

Implosive Stop [-vc] → Plain Stop [-vc]

***ɓ → p**

C1	→	**C1**
[+labial]		[+labial]
[-vc]		[-vc]

***p → f**

C1	→	**C1**
[+labial]		[+labial]
[+stop]		[+fricative]

ìfũ
'intestines'

Proto-Bantu

***-pụ́**
'stomach'

Akan

Implosive Stop [-vc] → Plain Stop [-vc]

***ɓ → p**

C1	→	**C1**
[+labial]		[+labial]
[-vc]		[-vc]

***p → f**

C1	→	**C1**
[+labial]		[+labial]
[+stop]		[fricative]

jæfű̃nű̃/æfúrú
'belly'

Common Bantu

***-pụ́**
'stomach'

Plain Voiced Stops

*g

4.1 pBK ***g**

Yoruba

Voiced Stop ➔ Voiced Stop

***g**	➔	**g**
C1	➔	**C1**
[+velar]		[+velar]
[+vc]		[+vc]

ogũ
‘war’

Akan

Voiced Stop ➔ Voiceless Stop

***g**	➔	**k**
C1	➔	**C1**
[+velar]		[+velar]
[+vc]		[-vc]

ɔkő
‘war’

Proto-Bantu

***-kɔ́ndɔ̀**
‘war’

Common Bantu

***-kóndò**
‘war’

*d

4.2 pBK ***d**

Yoruba

Voiced Stop ➔ Voiced Stop

***d**	➔	**d**
C1	➔	**C1**
[+alveolar]		[+alveolar]
[+vc]		[+vc]

dù
‘to struggle over’

dúdú
‘black/dark’

dì
‘freeze’

dè
‘to tie up’

dḭ́
‘to fry’

Akan

Voiced Stop ➔ Voiceless Stop

***d**	➔	**t**
C1	➔	**C1**
[+alveolar]		[+alveolar]
[+vc]		[-vc]

tù
‘to pull’

tũntũḿ
‘black/dark’

***t**	➔	**ʧ** /___ V1
		[+high]
		[+front]
		[-tense]

ʧḭ̀n
‘freeze’

ʧɪ̀–rɪ̀
‘to tie up’

ʧɪ̀
‘to fry’

Proto-Bantu

***-dụ̀t-**
‘to pull’

Common Bantu

***-dụ̀t-**
‘to pull’

***-yį́dö**
‘black/dark’

***-yį́dù**
‘black/dark’

*b

4.3 pBK ***b**

Yoruba

Voiced Stop → Voiced Stop

***b**	→	**b**
C1	→	**C1**
[+alveolar]		[+alveolar]
[+vc]		[+vc]
***b**	→	**b**
C1	→	**C1**
[+labial]		[+labial]
[+stop]		[+stop]

ɛ̀bá
‘side’

bì
‘vomit’

Proto-Bantu

***-bádë**, ***-bàdụ̀**
‘side’

Akan

Voiced Stop → Voiceless Stop

***b**	→	**p**
C1	→	**C1**
[+alveolar]		[+alveolar]
[+vc]		[-vc]
***p**	→	**f**
C1	→	**C1**
[+labial]		[+labial]
[+stop]		[+fricative]

ɔfã́
‘side’

fɪ̀
‘vomit’

Common Bantu

***-bádì**, ***-bàdụ̀**
‘side’

***-tápik-**
‘vomit’

Plain Voiceless Stops

*k

6.1 pBK ***k**

Yoruba

Voiceless Stop → Voiceless Stop

***k**	→	**k**
C1	→	**C1**
[+velar]		[+velar]
[+stop]		[+stop]

kḭ́
'to stuff/to cram/to press tight'

kấḭ́
'exclamation of wonder'

Akan

Voiceless Stop → Voiceless Fricative

***k**	→	**h**
C1	→	**C1**
[+velar]		[+glottal]
[+stop]		[+fricative]

hḭ̀ŋ
'to be stuck between/to be wedged in'

hấì
'expression of astonishment'

*t

6.2 pBK ***t**

Yoruba

Voiceless Stop → Voiceless Stop

***t**	→	**t**
C1	→	**C1**
[+alveolar]		[+alveolar]
[+stop]		[+stop]

tó
'to be enough'

tɛ́
'to spread'

tấ
'to be finished'

tầ
'to light'

ìtɔ̀
'urine'

tɔ̀
'urinate'

ɛ̀ta
'three'

tí
'that'

tè
'to worship'

té
'on top'

Akan

Voiceless Stop → Voiceless Fricative

***t**	→	**s**
C1	→	**C1**
[+alveolar]		[+alveolar]
[+stop]		[+fricative]

sʊ̌
'to be enough'

sɛ̀
'to spread'

sầ
'to be finished'

sɔ̀
'to light'

-sɔ
'urine'

-sɔ́
'urinate'

ɛ̀sã
'three'

sɛ
'that'

sʊ̌m
'to worship'

sò
'on top'

etí
‘ear’

asʊ́
‘ear’

Proto-Bantu

Common Bantu

***-tànd-**, ***-yànj-**
‘to spread’

***-tànd-**, ***-cànj-**
‘to spread’

***-cɻ́d-**, ***-cʊ́ɻg-**, ***-cëd-**
‘to become finished’

***-cìd-**, ***-cɻ́d-**, ***-cʊ́ɻg-**
‘to become finished’

***-cácɛ̀**
‘spark’

***-cácè**
‘spark’

***-cö-**
‘urine’

***-cù**
‘urine’

***-cʊ̀ɻb-**
‘urinate’

***-cʊ̀ɻb-**
‘urinate’

***-tátö**
‘three’

***-tátù**
‘three’

***-të**
‘that’

***-tì**
‘that’

***-tô**
‘ear’

***-tú**, ***-túé**, ***-túɻ́**
‘ear’

*p

6.3 pBK ***p**

Yoruba

Voiceless Stop → Voiceless Fricative

***p → f**

C1	→	**C1**
[+labial]		[+labial]
[+stop]		[+fricative]

fɔ̃
'lose weight/diet'

fɛ̀
'to widen/to be wide'

fũfũũ
'white'

Akan

Voiceless Stop → Voiceless Fricative

***p → f**

C1	→	**C1**
[+labial]		[+labial]
[+stop]		[+fricative]

fɔ̃ŋ
'lose weight/emaciate'

fɛí
'to spread'

fúfúo
'white'

Proto-Bantu

***-yɔ́nd-**
'to lose weight/emaciate'

***-yàd-**
'to spread'

***-yɛ́dö**
'white'

Common Bantu

***-yónd-**
'to lose weight/emaciate'

***-yàd-**, ***-yànj-**
'to spread'

***-yédù**, ***-yédụ̀**
'white'

Nasals

*m

7.1 pBK ***m**

Yoruba

Labial Nasal ➔ Labial Nasal

***m**	➔	**m**
C	➔	**C**
[+labial]		[+labial]
[+nasal]		[+nasal]

ɛ̀mḭ́
'breath'

èmi/mo/mi/ŋ
'I/me'

mũ
'drink'

ìmɔ̀
'knowledge'

mḭ̀
'swallow'

mã́
'do not'

mṵ̀
'to sink'

Akan

Labial Nasal ➔ Labial Nasal

***m**	➔	**m**
C	➔	**C**
[+labial]		[+labial]
[+nasal]		[+nasal]

hʊ̃mḭ́
'to breathe'

mi/mɪ
'I/me'

nṍmʔ**/nṍmṍ**
'drink'

nḭ̀m
'to know'

mḭ̀nḭ̀
'swallow'

mmã
'do not'

mḭ̀m
'to sink'

Proto-Bantu

***-pɛ̀ɛ̀m-**
'to breathe'

Common Bantu

***-pèèp-**, ***-púúm-**
'to breathe'

***-ŋga**, ***-mê**, ***-nɛ́** *‘I/me’*	***-ŋgá**, ***-ŋgé**, ***-ŋgú**, ***-mé**, ***mí *-né** *‘I/me’*
***-nu̱-** *‘to drink’*	***-mu̱-**, ***-nú-**, ***-nu̱-**, ***-nyu̱-**, ***-ŋú-** *‘to drink’*
***-màn-** *‘to know’*	***-màn-**, ***-mènj̀-** *‘to know’*
***-mj̀d-** *‘to swallow’*	***-mèd-**, ***-mèn-**, ***-mj̀d-**, ***-mj̀n-** *‘to swallow’*
***-bj́**, ***-kêmbà** *‘excreta’*	***-bj́**, ***-kímbà-** *‘excreta’*
***-yánà** *‘child’*	***-yánà** *‘child’*
***-bɛ́ɛ́dɛ̀** *‘breast’*	***-béédè**, ***-béénè**, ***-tómbò** *‘breast’*

*n

7.2 pBK ***n**

Yoruba

Alveolar Nasal ➔ Alveolar Nasal

***n ➔ n**

C	➔	**C**
[+alveolar]		[+alveolar]
[+nasal]		[+nasal]

ỏũn/ó
'he/she'

ɛ̃nĩ
'person'

nĩ
'to be'

nḭ̃torí
'because'

nḭ̃torí
'because'

inṹ
'stomach'

ɛnũ
'mouth'

ɛ̀nḭ̃/ònḭ̃
'today'

nĩ̀jí
'to be this/here'

nãã̀
'the/that'

Akan

Alveolar Nasal ➔ Alveolar Nasal

***n ➔ n**

C	➔	**C**
[+alveolar]		[+alveolar]
[+nasal]		[+nasal]

ɔ̃nʊ̃/ɔ́-
'he/she'

-nḭ́/-nĩ-
'person'

nĩ
'to be'

ntɪra
'because'

éntí
'because'

jæfʊ̃́nʊ̃́/æfúrú
'stomach'

anʊ̃́
'mouth'

ɛnnɛ̃́
'today'

nḭ́é/ne èjí
'to be this/here'

nʊ̃́
'the/that'

Proto-Bantu	Common Bantu
	***-ndé**, ***-ndí** *'him/her'*
***-ñtö** *'person'*	***-ñtù** *'person'*
***-dë** *'to be'*	***-dì**, ***-dị̀** *'to be'*
***-nù̱à** *'mouth'*	***-nù̱à** *'mouth'*
***-dɛ̀ɛ̀dɔ́** *'today'*	***-dèèdó** *'today'*
***-nɔ́** *'this'*	***-nó**, ***-nú** *'this'*
***-dá**, ***-ná**, ***-dɛ́**, ***-dêá** *'that/those'*	***-dá**, ***-dé**, ***-díá**, ***-ná**, ***-né** *'that/those'*

Liquids

*l

8.1 pBK *** l**

Yoruba

Lateral ➔ Rhotic

***l ➔ r**

C1 ➔ Ø

C2 ➔ C1

ɛ̀rḿ
‘laughter’

ire
‘blessing’

orí
‘head’

ooru
‘heat’

ɛrù
‘load’

irɔ́
‘falsehood’

Akan

Lateral → Rhotic

***l ➔ r**

C2 ➔ C2
[+lateral] [+rhotic]

sɪrí
‘to laugh’

nɛ̀irá
‘blessing’

tírí
‘head’

ohuhúró
‘heat’

dùrù
‘heavy’

atórɔ́
‘falsehood’

* Ĩ

8.2 pBK *** Ĩ** **/** ___ **V**

[+nas]

Yoruba

Nasalized Lateral ➔ Nasalized Rhotic

*** Ĩ** ➔ ***r̃**

C	➔	**C**
[+lateral]		[+rhotic]
[+nasal]		[+nasal]

ɛr̃ã
'meat'

ɛ̀r̃ĩ
'four'

àr̃ṹ-ú
'five'

r̃ì̀
'walk'

Akan

Nasalized Lateral ➔ Nasal

*** Ĩ** ➔ ***n**

C	➔	**C**
[+lateral]		[+nasal]
[+nasal]		

ɛnã́m
'meat'

anã́ŋ
'four'

ænṹ́m
'five'

nã̀m
'walk'

*r

8.3 pBK ***r**

Yoruba

Rhotic → Rhotic

*** r → r**

C	→	**C**
[+rhotic]		[+rhotic]

rɔ̀
'to rain'

rà
'buy'

èérú
'ashes'

rù
'to carry'

Akan

Rhotic → Stop

***r → *t**

C	→	**C**
[+rhotic]		[+stop] [+alveolar]

tɔ̀
'to rain'

tɔ̀
'buy'

Alveolar Stop → Alveolar Fricative

***t → *s**

C	→	**C**	**/___V**
[+rhotic]		[+fricative]	[+high] [+back] [+lax]

n-sʊ̋
'ashes'

sʊ̀
'to carry'

Proto-Bantu

***-dɔ́k-**, ***-nɔ́k-**
'to rain'

***-dànd-**
'to buy'

***-tɔ́**
'ashes'

Common Bantu

***-dók-**, ***-nók-**, ***-tónɟ-**
'to rain'

***-dànd-**
'to buy'

***-tó**, ***-túé**
'ashes'

***-tôt- *-tôád-**
‘to carry’

***-tút-**, ***-túád-**
‘to carry’

Fricatives

*s

9.1 pBK ***s**

Yoruba

Fricative ➔ Fricative

***s ➔ *s**

C ➔ C
[+Fricative] [+Fricative]
[+Alveolar] [+Alveolar]

ìsìsìjí
‘now’

sĩ̀
‘to bury’

so
‘to bear fruit’

sà
‘to apply medicine’

sà
‘to apply medicine’

sĩ́
‘to make incisions’

sɔ̀
‘to put down’

sĩ́
‘to sneeze’

sĩ́
‘to string’

sí
‘to’

Akan

Fricative ➔ Fricative

***s ➔ *s**

C ➔ C
[+Fricative] [+Fricative]
[+Alveolar] [+Alveolar]

sesée jí
‘now’

sié
‘to bury’

sʊ̀
‘to bear fruit’

sà
‘to heal’

sɔ̀
‘to apply medicine’

sà
‘to make incisions’

sʊɛ́
‘to put down’

ŋwãnsĩ́
‘to sneeze’

sĩ̃ná
‘to string’

sí
‘to’

sɑ̃̀
'to be better'

sũ
'to cry'

sɛ̃̀ŋ
'to be better'

sũ
'to cry'

Proto-Bantu

***-dɪ̧̀ɪ̧̀k-**
'to bury'

***-tên-**
'to cut'

***-tôôd-**
'to put down'

***-cɪ̧̀ŋgà**, ***-dɪ̧́gɪ̧̀**
'string'

***-dëd-**
'to cry'

Common Bantu

***-dɪ̧̀ɪ̧̀k-**
'to bury'

***-tín-**
'to cut'

***-túúd-**
'to put down'

***-cɪ̧̀ŋgà**, ***-dɪ̧́gɪ̧̀**
'string'

***-dìd-**
'to cry'

*h

9.2 pBK ***h**

Fricative → Fricative

***h → h**

C1 → C1
[+fricative] [+fricative]

hó
'to boil'

ìhĩ̀jí/nĩ́hĩ̀ĩ́
'here'

há
'narrrow'

hṹ/jṹ
'to itch'

Fricative → Fricative

***h → h**

C1 → C1
[+fricative] [+fricative]

hùrù
'to boil'

ɛhá/nɪ̃́hɑ̃̀ɑ̃́
'here'

hĩhĩaá
'narrow'

h̃ĩnĩĩ
'to be itchy'

Affricates

*c

10.1 pBK ***c**

Yoruba

Voiceless Affricate → Voiceless Fricative

***c → ʃ**

C1	→	**C1**
[+affricate]		[+fricative]

ʃá
'to cut'

ʃá
'to spark a fire'

ʃa̰
'to flow'

ʃà
'to pick up'

ʃú
'to be dark'

ɔ̀ʃɔ
'thorns used in pitfalls'

Akan

Voiceless Affricate → Voiceless Fricative

***c → s**

C1	→	**C1**
[+affricate]		[+fricative]

sà
'to make incisions'

sɔ̀
'to spark a fire'

sḭ̃ŋ
'to flow'

sà
'to pick up'

sṵ̃m
'to be dark'

nsɔ̀í
'thorns'

Proto-Bantu

***-cá**
'to do'

***-cɛ́c-**
'to cut open'

***-cácɛ̀**
'spark'

Common Bantu

***-cá**
'to do'

***-céc-**
'to cut open'

***-cácè-**, ***-cácì**, ***-cécé**
'spark'

	***-còc-** *‘to pick out’*
***-yí̯d-** *‘to get dark’*	***-yí̯d-**, ***-yì̯d-** *‘to get dark’*
***-cɛ́ndɛ́**, ***-yí̯gù̯à** *‘thorn’*	***-céndé**, ***-yí̯gù̯à**, ***-gùŋgà** *‘thorn’*
***-dù̯gæd** *‘to open’*	***-yì̯gud-** *‘to open’*

*ɟ

10.2 pBK ***ɟ**

Yoruba

Voiceless Affricate → Voiceless Fricative

***ɟ** → ***ʄ**

C1 → **C1**
[+affricate] [+fricative]

***ʄ** → **Ø / #___**

ɔ̀rũ̀
‘sky’

Proto-Bantu

***-gödô**
‘sky’

Akan

Voiceless Affricate → Voiceless Fricative

***ɟ** → ***ʄ**

C1 → **C1**
[+affricate] [+fricative]

***ʄ** → **s**

ɔ-sʊ́rʊ̀
‘sky’

Common Bantu

***-jùdú**, ***-gùdú**
‘sky’

Approximants

*j

11.1 pBK ***j**

Approximant → Approximant

***j** → **j**

C1 → **C1**
[+approximant] [+approximant]

jɛ
'to be proper/fitting'

jɛ
'right/correct'

ìjà
'suffering'

aja/ìjàwó
'wife'

jèjé/ìjá
'mother'

ìjàwó
'wife'

àjà
'chest'

èjí/jí
'this'

Proto-Bantu

***-kádj̨**
'woman'

***-nyj̨nà**

Approximant → Approximant

***j** → **j**

C1 → **C1**
[+approximant] [+approximant]

jɛ́
'to be proper/fitting'

jé
'right/correct'

jɛá/ɛjáẁ
'pain'

ɔjírí
'wife'

ɔjírí
'wife'

æwó/ɛnã́/ɛnṍ
'mother'

jǽ-m̀/jǽ mu (mu-inside)
'chest and stomach'

ejí/jí
'this'

Common Bantu

***-yádì**, ***-yánàkádj̨**, ***-yántù**, ***-yántu̧**
'woman'

***-yj́yà**, ***-yj́yò**, ***-nj̨nà**, ***-nyj̨nà**, ***-nòkò**
***-nyòkò**, ***-mààyó**

'mother'

'mother'

***-yám**
'shout'

***-yám**, ***-yàmb**
'shout/slander'

***-yàŋgô**
'quickness'

***-yàŋgù**
'quickness'

*w

11.2 pBK ***w**

Yoruba

Approximant → Approximant

***w**	→	**w**
C1 [+approximant]	→	**C1** [+approximant]

w̃ũ
'to weave'

awũ/ahũũ
'tortoise'

ìwɔ/o
'you'

w̃õ
'they/them'

wà
'to be' (locative)

Akan

Approximant → Approximant

***w**	→	**w**
C1 [+approximant]	→	**C1** [+approximant]

ŋw̃ĩ̀nĩ̀
'to weave/to mould pottery'

æ̀wúrú/æ̀húrú
'land tortoise'

wo
'you'

wɔ̃ŋ
'they/them'

wɔ̀
'to be' (locative)

Proto-Bantu

***-bômb-**
'mould pottery'

***-bɛ́**
'you'

Common Bantu

***-búmb-**
'mould pottery'

***-bé**
'you'

***-bɔ́**
‘they/them’

***-bá-**
‘to be’

***-bó, *-bú, *-bṵ**
‘they/them’

***-bá-**
‘to be’

Chapter 5

5.1.1. Summary and Conclusions

This thesis begins with a statement of the problem addressed herein. This problem is identified as a paucity of reconstructions utilizing the comparative method ancestral to Guthrie's work in Common Bantu and Proto-Bantu. Stewart's work has been the only forthcoming proposition to attempt to fill this gap in his reconstruction of what he terms Proto-Potou-Akanic-Bantu. According to current classificatory models, in this thesis, Proto-Potou-Akanic-Bantu is treated as coterminous with Proto-Benue-Kwa (East-Volta-Congo) as there has been no substantial evidence for the radical reordering that Stewart suggests based on the data he presents or any alternative hypothesis of genetic classification. However, his plain/implosive distinction is useful in capturing regular sound correspondences between Akan and Yoruba which are likely to be the result of a push chain.

An additional problem identified in this thesis is that Stewart's reconstruction based upon an isolated comparison between Akan and Bantu has not attained full coverage as shown through preliminary data gathered between Akan and Yoruba. Therefore, it was asserted that juxtaposing and analyzing data from other languages in the process of reconstruction might assist in refining current proposals of the nature of the C1 of the proto-language from which Akan, Yoruba and Bantu are descended at the lowest intermediate node, Proto-Benue-Kwa.

Opposing viewpoints in African proto-language reconstruction are delineated in the literature review section to familiarize the reader with ongoing methodological debates in African comparative linguistics with direct reference to the reconstruction of Proto-Benue-Kwa. In this section, one such opinion is that offered by Williamson

and Blench asserting that it is not possible to initiate the process of reconstruction until large numbers of probably cognate lexical items are available to compare, and until a subgrouping hypothesis exists to ensure that all parts of the phylum are properly represented. The view taken in this thesis, however, is more in line with Stewart's assertion stating that in order to propose a pilot-proto-language of any type it is necessary to discredit this idea that reconstruction must be based from the outset on a representative sample of all the daughter languages as this is not how reconstruction works even in theory. Although the premise that the ultimate goal of reconstruction is a proto-language that takes proper account of all the daughter languages is valid, the invalid inference is that the reconstruction must be based from the outset on a representative sample of all daughter languages. While this has been the point of view adopted in this thesis, shortcomings in Stewart's approach have been noted in that in an isolated comparison between two daughter languages, it is possible to overlook systematic and regular sound correspondences that are not readily evident in the putative reflexes of the two daughter languages compared. Similarly, in such an approach, non-cognate lexical items that appear to fit in the schema of sound change proposed may be presented as being cognate without other languages against which one can compare them. The view taken in this thesis is therefore a compromise acknowledging Stewart's observation that a foundation must begin somewhere while also acknowledging the point of critics in that there are bound to be unavoidable limitations in reconstructions that do not and cannot truly even be expected to account for the data present in the diverse array of the daughter languages. Stewart's work and framework of sound change are taken as templates or foundations which may be tested against data from other daughter languages.

Data from Yoruba is presented as a logical middle ground between Akan and Bantu and the next logical step in Proto-Benue-Kwa reconstruction. The view taken in this thesis is that there is potential in Stewart's adaptation of the comparative method to the African context. And, until there is a representative sample of all daughter languages, his work does provide a foundation of reconstructions that can be tested, questioned, accepted or rejected on the basis of bringing data from a representative sample of all daughter languages into the picture for the purposes of such testing. This process is fundamental to the scientific method in that data is gathered, a hypothesis is developed, the hypothesis is tested and conclusions are drawn. The next stage encompasses bringing more data to bear on these conclusions. At the very least, this thesis has attempted to lay the groundwork for doing just that. The three branches descended from Proto-Benue-Kwa were represented in form of Akan (Kwa), Yoruba (West Benue-Congo) and Proto-Bantu/Common Bantu (East Benue-Congo). Utilizing data from these three representative daughter languages, tentative C1 sound correspondences analogous to those presented in Stewart's reconstructions are identified. When data from the current comparison between Akan and Yoruba invites alternative proposals, alternative proposals are offered. A central focus of this thesis is to raise a number of questions that may prove valuable in further research in Proto-Benue-Kwa and other proto-languages of Africa.

In the future other languages will need to be systematically brought into this comparison of Proto-Benue-Kwa so that one does not rely on an isolated comparison of two or three representative languages. However, this should be done one by one so that, as opposed to the technique of mass comparison, recurrent and regular sound correspondences may be identified for each language for each consonant and

vowel of the proto-language. Based on this data, reconstructed forms may then be postulated. To date, reconstructions have not reached the level of accuracy to the point that they have achieved full coverage. However, with the gradual addition of other daughter languages to the work of Proto-Benue-Kwa reconstruction, this goal may be accomplished in the near future.

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