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Tone in Saxwe

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1 Introduction

This study addresses the tone system of Saxwe, a Kwa language of the Gbe continuum spoken in the country of Benin. In this study, I describe tonal data observed in the Saxwe language and account for these data using a derivational, rules-based approach. Evidence throughout this study shows that in order to explain the Saxwe tone system, one must take into account not only lexical and grammatical tone, but also structurally-driven tone—tone which is conditioned by the presence of certain prosodic or morphosyntactic structures. Aboh (2004) remarks that there is a shortage of comprehensive tone studies of Gbe languages. In reference to certain of the Gbe variants, he states, "Even though a non-native speaker could find it somehow easy to identify the two register tones...as long as words are kept in isolation, he needs a rather sophisticated machinery once words are put together to form a sentence. Tones can undergo both syntactic and phonetic changes..." (p. 28). A single study cannot cover every topic related to tone production in a language, particularly in the domain of phonetics, but this study has as its aim to describe the basics of the "sophisticated machinery" that produces Saxwe sentences and to describe how the historical development of the current tone system helps us to understand its present state.

Saxwe displays a number of interesting tonal complexities which make it worthy of detailed study, and I briefly highlight a few of those complexities here. To start with, Saxwe has a history of phonological consonant-tone interaction that can still be easily observed in the present-day lexicon. A depressor consonant will almost always be followed by an underlying L tone, but L also exists in a number of words in the absence of a depressor consonant. While some of the neighboring Gbe languages have been analyzed as having a two-way underlying tonal contrast with a third surface height derived as a result of consonant-tone interaction (Ansre, 1961; Bole-Richard, 1983; Stahlke, 1971), Saxwe clearly has a three-way underlying tonal contrast. In this respect, it resembles Yoruba (Akinlabi, 1985; Pulleyblank, 1986). There are historical claims that the Saxwe ancestors migrated from the Yoruboid-speaking area into the Gbe-speaking area (Pazzi, 1979). The present-day Saxwe tone system shows many indications of being the product of contact between a language with two underlying tones and a language with three underlying tones.

A further interesting observation is that specific prosodic and morphosyntactic structures are responsible for certain tonal phenomena in Saxwe. This is relevant at boundaries at the level of the phonological word as well as at the level of the intonational phrase.

The Saxwe tonal system consists of a three-way underlying contrast between /H/, /M/ and /L/, but postlexical rules of tonal spread dictate that both H and L spread onto M tone-bearing units. In part because of this tonal spread, both automatic and non-automatic downstep of H are observed in Saxwe—the former

triggered by a surface L between Hs and the latter triggered by a floating M between Hs. What is especially noteworthy in the description of these two types of downstep is that there is fairly significant interspeaker variation in the phonetic implementation of downstep within a single dialect.

The following is the structure of this study. Chapter 1 gives an overview of the Saxwe language and the methodology used for this study. In this chapter, I also outline the basic phonology, morphophonology and syntax of Saxwe, highlighting information that is useful in interpreting the data given in this study.

In chapter 2, I provide a survey of some of the theoretical frameworks in which this study is anchored. This includes a review of topics such as tonal underspecification, as well as a look at some of the ways in which consonantal segments affect tone in various languages. It also includes a review of some of the ways in which tone can be sensitive to prosody and how this prosody relates to syntactic structure. There is a final summary of the tone analyses that have been proposed for related Gbe languages.

The next three chapters work from smaller to bigger units of language and touch on three kinds of tonal input that are brought into the phonological component—lexical tone, grammatical tone, and tone which is conditioned by the presence of certain prosodic or morphosyntactic structures. Chapter 3 presents the basic underlying monomorphemic noun and verb tonal patterns. I also give the set of rules which derive surface forms from underlying forms in simple utterances. The processes of automatic and non-automatic downstep in Saxwe are first discussed in this chapter. In chapter 4, I look at tonal phenomena in words that are more complex than monomorphemic C(C)V verbs and V.C(C)V nouns. This includes polymorphemic forms and borrowed nouns. In the course of this chapter, I describe a structurally-driven tonal boundary at the level of the word. Chapter 5 describes ways in which grammatical tone—tone which carries specific meaning without the support of segmental-level phonemes—is used to make clause-level morphosyntactic distinctions. In addition, this chapter looks into tonal boundaries assigned at the level of the intonational phrase.

Having examined the data presented in chapters 3 through 5, I describe in chapter 6 how the Two-Feature model can offer explanation for certain observations within the Saxwe tone system. We see in a number of cases that H, M and L tones display certain asymmetries in the Saxwe data. The Two-Feature model of tone provides explanations for these asymmetries and its application to the Saxwe tone system simplifies the formulation of some of the derivational rules.

Chapter 7 touches on phonetic implementation and gives instrumental support for claims made in previous chapters regarding surface forms. Focus is particularly placed on baseline F_0 production of H, M, and L; the automatic and non-automatic downstep of H; and the surface realization of monomorphemic nouns.

Finally, chapter 8 concludes this study with summaries of the major findings of this study, as well as suggestions for further work and a discussion of the implications of what is seen in the Saxwe system.

1.1 Language background

Saxwe is a Kwa language in what is labelled as the Gbe continuum (Capo, 1984, 1991)—a group of languages including Ewe, Fon, Gen, and Gun. Saxwe is spoken in the southern part of the country of Benin. The name given by Saxwe speakers for their language is [sáxwé-gbè]; its ISO code is [sxw]. In the *Ethnologue* (Eberhard, Simons, & Fennig, 2019), the language is listed as Saxwe. Various spellings that have been used for the name of this language include the following.

- Saxwe (Beavon-Ham, 2012; Johnson & SIL International, 2011)
- Saxwegbe, Saxwe (Capo, 1984; Dotouve, 2013)
- Sahoué, Sahoe, Sahouè (CENALA, 1995)
- Sahwe, Sáhwe (Pazzi, 1979)

The 2003 government census recorded the Saxwe population as being approximately 170,000 (INSAE, 2003). Current population figures are estimated at 279,000 (Eberhard et al., 2019). A map of the geographical distribution of Saxwe speakers is found in Appendix A. This map identifies the towns where Saxwe is spoken, as well as where its closest neighboring variants, Daxe and Se, are spoken.

Saxwe is identified by Capo as belonging to the sub-group Phla-Pherá within the Gbe dialects (1991). According to Capo, the other of the five sub-groups are Ewe, Gen, Aja, and Fon. Kluge (2007), using the results of linguistic surveys of the Gbe languages, identifies three major divisions among the Gbe languages—Western Gbe, Central Gbe (limited to Aja), and Eastern Gbe. Under this analysis, Saxwe fits among the Eastern Gbe languages, along with Fon and Gun.

Speakers of Saxwe and consultants I have worked with informally identify several subdivisions of spoken Saxwe. These include:

- the variety spoken in Houeyogbe and surrounding towns, including Zoungbonou, Adrome and Doutou (Houeyogbe district)—known by some as the [dútù] subdivision
- the variety spoken in Lobogo and surrounding towns (north-western side of the Bopa district)—included by some in the [dàkplá] subdivision
- the variety spoken in Bopa and surrounding towns (south-eastern side of the Bopa district); a variety identified in some documents with its own label, Gbokpa (Kluge, 2007)—also included as part of the [dàkplá] subdivision

This being said, practically every major village is said to have its own slight particularities of speech. I am unable to verify to what extent this is the case.

The early history of the Saxwe people is documented by Pazzi (1979) and Kpinso (2006). Pazzi describes the Saxwe-speaking people as a group of immigrants who relocated among the Gbe peoples of Tado. According to Pazzi, the Saxwe claim to be originally part of the Sabe kingdom (north of the Gbe-speaking areas), descendants of the Ife kingdom (located in present-day Nigeria). Pazzi writes that it is not clear exactly when they settled in the "terres noires" or marshland regions called the Ko. The reason for their inhabitation of this area seems to have been that this land was not wanted by the Gbe groups already present. The Saxwe established their royal village on the border of the Ko region in the town called Houeyogbe, which means "new home" (Pazzi, 1979).

Karl-Augustt (1984) notes that the first recorded interaction of a Saxwe person among the Gbe-speaking groups was in 1727. He relates that the Yoruba historian Moulero (citation not given) estimated that over half the words in Saxwe were of Yoruba origin. Local tradition (Kpinso, 2006) affirms that the Saxwe have their origins among the Yoruboid people groups.

The Saxwe people first became a substantive part of written history when they staged a revolt against the French colonial leadership in 1918 (Metinhoue, 2006). Known as the "Revolt of the Saxwe", this was a reaction to their increasing frustration with the impositions made by the colonial leadership, including an attempt by the French to recruit Saxwe young men into their army. The revolt was short-lived.

This history of being a Yoruboid people who descended into a Gbe-speaking region and adapted their speech accordingly has resulted in a Gbe language which differs in some interesting ways, both phonologically and syntactically, from other languages in the Gbe continuum.

In the remainder of this chapter, I provide the necessary background for the study of tone in Saxwe. Section 1.2 describes previous research done on Saxwe. In section 1.3, I discuss the methodology used in this study. Section 1.4 contains an overview of Saxwe phonology. In section 1.5, I describe morphophonological processes in Saxwe that touch on the study of tone. Section 1.6 looks at vowel underspecification in Saxwe. Section 1.7 clarifies the conventions of tonal transcription used in this study. In section 1.8, I give a very brief overview of Saxwe morphosyntax, concentrating on those structures that make it easy to read the example sentences given in this study. Finally, section 1.9 ends with a summary of this chapter and how it relates to the study of tone.

1.2 Previous research done on Saxwe

The first descriptive work on Saxwe, a phonetic outline, was done by Tchitchi (1984). Subsequently, a more in-depth phonological analysis of Saxwe was done by Tossa (1984). Following this, Capo included Saxwe among the languages he looked at when comparing the phonologies of the various languages in the Gbe continuum (Capo, 1984, 1991).

In addition to these studies, there exists a short lexicon including a brief orthography statement which was distributed among literacy supervisors in the Saxwe area (CENALA, 1995). A series of three literacy booklets and a book on arithmetic were also published as a part of the Beninese government's program to promote literacy in Saxwe.

Saxwe data can be found in a comparative word list published by a government research body (CNL du Bénin, 1983). Data can also be found in a compilation of local language translations of technical terminology, published by the Beninese government's Centre National de Linguistique Appliquée (CENALA, 1984).

A survey of the Saxwe-speaking region was carried out by SIL International (Johnson & SIL International, 2011). This survey included language comprehension testing among peoples of neighboring language communities.

More recent work includes a manuscript on general topics in Saxwe phonology by Beavon-Ham and Ham (2013), a study of the nasal consonant phonemes by Ham (2012), and a preliminary analysis of the interaction between consonant quality and tone by Beavon-Ham (2012).

1.3 Methodology of data gathering

The recordings referred to in the examples given in this study were collected over an initial period of two months (March and April) in 2015, and then a follow-up period of two weeks in May of 2017. Background research leading up to this collection of recordings was done over the course of four years from 2011 to 2015 during intermittent periods of residence in the town of Adrome, on the immediate outskirts of Houeyogbe.

My consultants (with their approximate ages) included the following: Saturnin Amoussou (mid 50's) from the village of Ahouloume, Jean Kpinso (late 60's) from the village of Adrome, Pierrette Goudjinou (late 20's) from the village of Tohou, Jean de Dieu Amoussou (mid 20's) from the village of Doutou. Other individuals who helped verify data included Patrice Videgnon (mid 20's) from the village of Lobogo and Godefroy Sossou (early 30's) from the village of Zoungbonou.

My approximately 5,000 recordings (of varying sizes ranging mostly from individual words to sentences) that are archived in conjunction with the publication of this study were obtained primarily from André Taïve (early 40s) from the village of Adrome. Taïve is a tailor with considerable experience in public oral translation and in radio recording. Chapter 7, which discusses the phonetic implementation of tone, gives details on the other speakers whose data contributed to the findings in that chapter as well as the techniques used for obtaining those data.

As much as possible, I have tried to reference a recording with each example given so that interested readers may have access to the primary data, found at: <https://drive.google.com/open?id=1m1ayvexqtOGCHS9eFiypts9vz-NOu0dr>.

Beyond these recordings and the elicited data obtained from consultants, my corpus of data included a lexical database of approximately 3600 entries using the program Fieldworks Language Explorer (SIL International, 2011). From this database, I first established a list of 300 monomorphemic nouns and 215 monomorphemic verbs. I then worked with Pierrette Goudjinou and André Taïve to categorize these nouns and verbs into groups of similar-sounding tone patterns, using whistling as a tool for helping in the distinction between minor differences. Following this, I recorded the transcriptions of these forms and did oral recordings of these words. Then I put these nouns and verbs into a variety of paradigms, doing oral recordings of all the paradigms with Taïve. I then followed the same process with other parts of speech. I continued with recordings of language paradigms with units of all levels, monomorphemic and polymorphemic, with utterances ranging from words to phrases to texts.

All recordings were done on a Marantz PMD 660 solid state recorder using an external Shure SM10A headworn, unidirectional dynamic microphone. The recordings were done in a cement-walled room, with efforts made to use fabric to dampen echos. The room was within earshot of a road and occasional street sounds may be heard on the recordings.

Finally, pitch traces and pitch measurements that appear in this study were done using the program Praat (Boersma & Weenink, 2015).

1.4 Overview of the phonology of Saxwe

This discussion of Saxwe phonology is drawn in large part from Beavon-Ham and Ham (2013), as well as from Tossa (1984). It begins with a look at syllable structure (section 1.4.1), followed by a vowel inventory (section 1.4.2) and a consonant inventory (section 1.4.3). Next, I examine in section 1.4.4 the status of nasal consonants in Saxwe, an issue that is relevant to consonant-tone interactions. Following this is a description of other allophonic contrasts in section 1.4.5, followed by a brief mention of the process of vowel elision in section 1.4.6.

1.4.1 Syllable structure

A discussion of the phoneme inventory of Saxwe must begin with a look at the structure of syllables. All syllables in Saxwe are open. In monomorphemic words there are three types of syllables: CV, V and CCV. Polymorphemic forms may have a fourth type of syllable, which is CCCV.

The CV syllable structure is by far the most common type of syllable. As Tossa demonstrates in his phonology of Saxwe, CV syllables are abundant and are an open class (1984).

The V syllable structure, however, is a closed class and is found only as a grammatical morpheme or as the initial vowel in a V.C(C)V noun. The V syllable only appears word-initially; when suffixes of the shape /-V/ are affixed to a word, a process of resyllabification makes these suffixes the nucleus of a C(C)(C)V syllable. This morphophonological process is described in section 1.5.1.

To my knowledge, the entire inventory of V syllables that function as grammatical morphemes are listed in (1).

- | | | | |
|-----|------------------|---|--|
| (1) | [ō] ¹ | 2SG | |
| | [é] | 3SG | |
| | [ḡ] | negation marker (NEG) | |
| | [ò] | anterior marker (ANT) | |
| | [á] | subjunctive marker (SBJV) | |
| | [á] | marks same subject non-initial clause chains in a future or habitual TAM framework (SS) | |

Most frequently, V syllables occur as the initial vowel (either /a/, /ε/, or /o/) in a V.C(C)V noun as in (2).

- | | | | |
|-----|-------|---------------|--|
| (2) | [ābó] | arm | sxw-L0051-VCV nouns-arm-un.wav |
| | [ēdǣ] | tongue | sxw-L0219-VCV nouns-tongue-un.wav |
| | [ōsú] | husband, male | sxw-L0226-VCV nouns-husband, male-un.wav |

As with other Kwa languages that no longer have a functioning class system, it is hypothesized that these initial vowels in Gbe historically had a role as class marker prefixes and are now a vestige of that system (Good, 2012; Williamson, 1989).

The question has also been raised whether these initial vowels might be a derivational prefix, deriving a noun from a verb (Lefebvre & Brousseau, 2002, p. 193). This question comes from pairings where verbs and nouns are clearly semantically related, the difference being the presence of the initial vowel (*e.g.* [kú] 'die' and [ōkú] 'death'). However, the addition of a word-initial vowel to a verb in order to derive a noun is not a productive process from a synchronic perspective.

The initial vowel does, however, have interesting phonological properties; it has a predilection for undergoing deletion in processes such as noun compounding and in fast speech. Sometimes it is merely the segmental features of the vowel that are lost, and sometimes the loss includes the segmental features together with the tone-bearing unit. This is explored further in sections 4.2 and 4.4.

Long vowels exist in Saxwe in two clearly defined contexts: (1) in words with ideophonic properties, and (2) at a morphological boundary when a pronominal

¹ Note that the symbol (˘) over the [o] indicates a mid-falling tone.

first or third singular suffix is attached to the verb. The former context may involve more pronounced lengthening and is discussed in section 4.9, and the latter involves less pronounced lengthening and is discussed in section 4.6. An example of each is given below.

- | | | | |
|-----|---------|------------------|------------------------------------|
| (3) | [xwíí] | quiet, quietly | sxw-L0038-Ideophones-un.wav |
| | [é kô:] | he laughed at me | sxw-L0044-verb plus pronoun-un.wav |

Leaving now the topic of V syllables, I turn to CCV syllables. The monomorphemic C₁C₂V syllable structure exists in Saxwe, but the identity of C₂ in these structures is limited to the sonorants /l/ (and its allophone [ɾ]), /j/, and occasionally /w/.²

- | | | | |
|-----|---------|------------------|--|
| (4) | [āglà̃] | jaw | sxw-L0158-VCV nouns-jaw-un.wav |
| | [ōtrē̃] | bachelor | sxw-L0155-VCV nouns-bachelor-un.wav |
| | [ōfjó] | dry season | sxw-L0105-VCV nouns-dry season-un.wav |
| | [ābwī] | vaccine, syringe | sxw-L0247-VCV nouns-shot, syringe-un.wav |

1.4.2 Vowels

Saxwe has a seven-vowel system that includes vowel nasalization. In total, it has seven oral vowels and five nasalized vowels, shown in Table 1. In morphophonological processes, the vowels /a/ and /ã/ are grouped with [back] vowels (section 1.5.1). Although the feature [round] may appear redundant in this table, we see in section 4.6 that this feature is active in morphophonological processes.

² All CwV sequences are probably derived historically from the affixation of a word-formation suffix that was a completely unspecified vowel (/V/) to a word that had a rounded vowel word-finally before affixation. Height harmony would have been part of the affixation process, followed by strengthening of the stem vowel to [w]—both of which are phonological processes that are attested synchronically when the 3SG suffix is affixed to a verb. As evidence of this claim of historical derivation, I have found that all CwV sequences in my database end in a front vowel.

Table 1 - Saxwe vowel phoneme inventory

| | | | [back] | | | |
|--------|---|---------|--------|---------|---------|---------|
| | | [nasal] | | [nasal] | [round] | |
| | | | | | | [nasal] |
| [high] | i | ĩ | | | u | ũ |
| [ATR] | e | | | | o | |
| | ɛ | ẽ | | | ɔ | õ |
| [low] | | | a | ã | | |

An example of each of these vowels is found in (5).

| | | | |
|-----|-------|-----------------|---|
| (5) | [õfĩ] | place, location | sxw-L0082-VCV nouns-place-un.wav |
| | [õtĩ] | tree | sxw-L0166-VCV nouns-tree-un.wav |
| | [õté] | grinding stone | sxw-L0172-VCV nouns-grinding stone-un.wav |
| | [õxê] | bird | sxw-L0262-VCV nouns-bird-un.wav |
| | [õfẽ] | error | sxw-L0163-VCV nouns-error-un.wav |
| | [õtú] | gun | sxw-L0136-VCV nouns-gun-un.wav |
| | [õfú] | fur | sxw-L0222-VCV nouns-fur-un.wav |
| | [õtó] | ear | sxw-L0233-VCV nouns-ear-un.wav |
| | [õtó] | father | sxw-L0230-VCV nouns-father-un.wav |
| | [õtõ] | shrew | sxw-L0256-VCV nouns-shrew-un.wav |
| | [õxá] | broom | sxw-L0085-VCV nouns-broom-un.wav |
| | [õtã] | saliva | sxw-L0140-VCV nouns-saliva-un.wav |

1.4.3 Consonants

There are twenty-one consonant phonemes in Saxwe. Table 2 describes these phonemes in terms of their distinctive features. Note that in this table, allophones are indicated in phonetic brackets below the listing of the phoneme.

Table 2 - Saxwe consonant phoneme inventory (allophones in brackets)

| | | | [labial] | | | | | | [back] | | | |
|-------|-------|--|----------|--------|-------|----------------|--------|----------|--------|--------|----|----|
| | | | [cont] | [cont] | [api] | [del. release] | [cont] | [labial] | | | | |
| | | | | | | | | [cont] | | [cont] | | |
| [vce] | | | (p) | f | t | s | | tʃ | k | x | kp | xw |
| | | | b | v | d | z | ɖ | dʒ | g | ɦ | gb | ɦw |
| | [m] | | | | | [n] | | | | | | |
| | | | | | | | | | | | | |
| | [son] | | w | | | j | | | | | | |
| | | | [w̃] | | | [ɲ] | | | | | | |
| | [lat] | | | | | l | | | | | | |
| | | | | | | [r] | | | | | | |

Leaving aside the issue of allophones in complementary distribution (discussed in sections 1.4.4 and 1.4.5), there are several remarks to be made about this chart of consonant phonemes in Saxwe. First, I note that the phonemes are arranged in rows such that the first row is comprised of voiceless obstruents, the second row is made up of voiced obstruents (including the sounds /b/ and /d/ which are unusual in having nasal allophones), and the remaining rows group the sonorants. These three groupings, as well as the sub-category which includes just the sounds /b/ and /d/, are relevant to tonal behavior; this is discussed in depth in chapter 3.

The sound [p] is found in Saxwe, but only in borrowed words and in ideophones. For this reason, its status as a phoneme of the language is marginal. Tossa (1984) does not include this sound in his phoneme chart of Saxwe and here I mark it in parentheses to indicate its marginal status.

The sound [ɣ] (not found in Table 2) is found in a handful of Saxwe words as pronounced by some older speakers, appearing in only 5 words out of my 3600-word database. Younger speakers do not have this sound and substitute /j/ or /w/ for it. I have chosen to leave it out of the inventory of consonant phonemes, as it no longer appears to play a role in the phonological system of Saxwe.

In Table 2, /ɦ/ functions as the voiced counterpart to /x/ and /ɦw/ as the voiced counterpart to /xw/. Bole-Richard discusses the difficulty of properly identifying the place of articulation for the cognate sound of /ɦ/ in Mina; his claim is that this sound is simultaneously velar and glottal (1983: p. 59). Lefebvre and Brousseau label the cognate sound in Fon as the velar /ɣ/ (2002: p. 16). Capo (1994), however, claims that the phoneme /ɣ/ does not exist in Fon or in the Phla-Pherá dialects (of which Saxwe is one), although it does exist in neighboring dialects.

While there are individual tokens in Saxwe where the phoneme /fi/ can sound like a velar /ɣ/, for the most part this phoneme is pronounced as a glottal sound, but with more friction "noise" than one might expect from a voiced glottal fricative. Given this reality, Capo's assertion, and the fact that some older speakers have a sound /ɣ/ distinct from /fi/ for a few lexical items, I feel it is correct to label this sound as /fi/. Perhaps Bole-Richard's (1983) hypothesis of simultaneous stricture at the velum and in the glottal region is an accurate assessment of the exact means of articulation of this sound in Saxwe as well. This is a potential area for further phonetics research.

The sounds /xw/ and /fiw/ operate each as a single phoneme in Saxwe. Bole-Richard (1983) states that the phoneme /xw/ in Saxwe (and Aja, Fon, and Gun) has /ɸ/ as the corresponding cognate sound in Ewe, and the phoneme /fiw/ in Saxwe (and Aja, Fon, and Gun) has /β/ as the corresponding cognate sound in Ewe. Data from the reduplication process in Saxwe (described in section 1.5.2) show clearly that /xw/ and /fiw/ are treated as a single phoneme in that although the reduplication prefix only permits a single consonant of the verb onset to be copied, /xw/ and /fiw/ both appear in the reduplication prefix, just as /gb/ and /kp/ both appear in this prefix.

The following are examples of each of the consonants in the phoneme inventory.

| | | | |
|-----|------------------------------------|-----------------------|--|
| (6) | [āfɔ̃] | foot | sxw-L0267-VCV nouns-leg-un.wav |
| | [ōtɔ̃] | father | sxw-L0230-VCV nouns-father-un.wav |
| | [ōsɔ̃] | horse | sxw-L0231-VCV nouns-horse-un.wav |
| | [ōtʃɔ̃] | dead person, cadaver | sxw-L0218-VCV nouns-cadaver-un.wav |
| | [ōkɔ̃] | neck | sxw-L0150-VCV nouns-neck-un.wav |
| | [ōxɔ̃] | room, building | sxw-L0252-VCV nouns-room-un.wav |
| | [ōkpɔ̃] | panther | sxw-L0151-VCV nouns-panther-un.wav |
| | [āxwá] | shout, commotion | sxw-L0303-VCV nouns-shout.wav |
| | [ābɔ̃] | arm | sxw-L0051-VCV nouns-arm-un.wav |
| | [āvɔ̃] | cloth | sxw-L0202-VCV nouns-cloth-un.wav |
| | [ōdà] | bow | sxw-L0197-VCV nouns-crossbow-un.wav |
| | [āzɔ̃] | smoke, haze | sxw-L0114-VCV nouns-smoke, haze-un.wav |
| | [ōdā] | hair | sxw-L0174-VCV nouns-hair-un.wav |
| | [ōdʒɔ̃ ^R] ³ | flea, louse | sxw-L0075-VCV nouns-flea, louse-un.wav |
| | [āgɔ̃] | underside, area under | sxw-L0297-VCV nouns-underside-un.wav |
| | [ōhɔ̃ ^R] | money | sxw-L0270-VCV nouns-money-un.wav |
| | [ōgbɔ̃ ^R] | goat | sxw-L0065-VCV nouns-goat-un.wav |
| | [āhɰà] | locust bean pod | sxw-L0191-VCV nouns-locust bean pod-un.wav |
| | [ōwɔ̃] | corn flour | sxw-L0167-VCV nouns-corn flour-un.wav |
| | [ōjɔ̃] | call, hail | sxw-L0170-VCV nouns-call-un.wav |
| | [ālɔ̃] | hand | sxw-L0245-VCV nouns-hand-un.wav |

1.4.4 The status of nasal consonants in Saxwe

The phonemic status of the nasal sounds [m], [n], [ɲ] and [w̃] is an issue that has long been a source of discussion in Gbe languages.⁴ In Saxwe, these sounds appear in complementary environments: [m], [n], [ɲ] and [w̃] precede nasalized vowels and [b], [d], [j] and [w] precede oral vowels.⁵ Nasalized vowels, however, are not restricted to an environment in which they follow nasal consonants.

A brief comment is needed regarding the phonetic articulations of the sounds typically noted orthographically in the Kwa languages as **ɖ** and **d**. What is marked as **ɖ** is not a true retroflex as is found in languages in India. Rather, the sound **ɖ** in Ewe is characterized by Ladefoged (1964, p. 20) as an apical post-alveolar stop which is articulated with the tip of the tongue against the alveolar ridge. In contrast with this, the sound **d** is described as a laminal denti-alveolar stop

³ The superscript ^R indicates a slight upglide in pitch utterance-finally. This is more noticeable for some speakers than for others and is described in sections 3.6.4 and 3.7.5 and demonstrated in F₀ measurements in sections 7.5.3 and 7.5.4.

⁴ For some Gbe languages, the sound [ɲ] can be added to this list with its complementary sound [ỹ] preceding oral vowels.

⁵ Before the nasalized vowel [ū̃], the sound [w̃] can be almost imperceptible. Before the nasalized vowel [ɔ̃] the nasal counterpart to [w] can sound more like [ɲ^w]. Before the high vowel [ĩ], the nasal counterpart of [j] can sound more like [j̃].

and is articulated with the blade of the tongue against the teeth and alveolar ridge (Ladefoged, 1964, pp. 19–20). The description of these sounds in Ewe matches my own informal observations of the articulations of these sounds in Saxwe.

A complicating factor in the issue of Gbe phonology is that the sounds [b] and [d], unlike other voiced obstruents, do not have paired voiceless counterparts. This has been attributed to the fact that these sounds are historically derived from pre-Gbe implosive sounds *ɓ and *ɗ (Stewart, 1989, pp. 240–241).

One important question, then, that arises in trying to analyze the phonology of many Kwa languages is which of the following hold true: (1) /b/ and /d/ are the underlying consonants (Bole-Richard, 1983, 1984; Capo, 1991; Gbéto, 1997; Lefebvre & Brousseau, 2002; LeSaout, 1973; Tossa, 1984); (2) /m/ and /n/ are the underlying consonants (Ham, 2012; Yai, 1969), or (3) all of /b/, /d/, /m/, and /n/ have phonemic status (Bentinck, 1975; Stewart, 1989).

In defense of the underlying /b/ and /d/ theory, we see that there is fairly clear evidence for a process of nasal assimilation in the [w]-[w̃] alternation, so by analogy one would assume nasal assimilation to be the relevant process by which the phonemes /b/ and /d/ would be realized as the allophones [m] and [n]. Also, the sounds [b] and [d] sometimes behave as depressors in the tone system of languages, which would argue for their belonging to the category of voiced obstruents (Bole-Richard, 1983, pp. 110–111).

On the other hand, positing a language without phonemic nasal consonants is typologically unusual. Moreover, there is no single feature or natural class that would unite the "nasalizable" sounds /b/, /d/, /j/, and /w/ from a synchronic point of view, so the rule that would derive [m], [n], [ɲ], and [w̃] from these phonemes looks fairly arbitrary.⁶

Despite these difficulties, the analysis I adopt here, as represented in Table 2, is that /b/ and /d/ are the underlying phonemes. This issue of the status of nasal consonants is tied to the study of tone in Saxwe. Take, for example, the complementary sounds [b] and [m]. As is seen in chapter 3, among verbs that begin with the sounds [b] or [m], all of them display tone patterns that are found in verbs that begin with sonorants (*i.e.* non-depressors). However, among nouns that have the consonant sounds [b] or [m], some (in cases of both [b] and [m]) display tone patterns that are typically found among nouns that have depressor consonants, and some display tone patterns that are typically found among nouns that contain sonorants, with the numbers being roughly equal on either side of this division.

The fact that a noun that has the consonant sound [m] would ever display a tone pattern typically found among nouns that have depressor consonants suggests

⁶ Based on the historical development of the sounds, Stewart (1989) argues that the feature [lenis] (based largely on historic realities) would unite these sounds and distinguish [b] and [d] from the voiced obstruents which do not participate in this nasal assimilation process.

that in Saxwe phonology, this sound is either currently an allophone of /b/ or it was an allophone of /b/ historically.

The fact that nouns show more complexity in this regard is not unrelated to Smith's (2011) observation that nouns generally show more phonological contrasts than do other parts of speech, including verbs. In this case, we could say that nouns in Saxwe tend to preserve historically relevant tonal contrasts longer than do verbs. This is true not only when we look at historic trends of consonant-tone interaction, but also when we look at the large number of tonal patterns that exist for nouns as compared to the fewer number of tonal patterns that exist for verbs—a fact discussed in section 3.10.

1.4.5 Other phonological rules

In Saxwe, the consonant [l] obtains the feature [nasal] by assimilation when it appears as the second consonant in a consonant cluster preceding a nasalized vowel and following the phonetic sounds [m] and [w̃] (underlying phonemes /b/ and /w/).

- | | | | | |
|-----|----------|----------|----------|-------------------------------------|
| (7) | /ɔ̃blɛ̃/ | [ɔ̃mlɛ̃] | fishhook | sxw-L0022-VCV nouns-fishhook-un.wav |
| | /wlã̃/ | [w̃lã̃] | write | sxw-L0105-verbs-write-un.wav |

The flap [ɾ] is an allophone of /l/ and occurs following coronal consonants.

- | | | | | |
|-----|--------|--------|----------------|--|
| (8) | /jlã̃/ | [jɾã̃] | be bad | sxw-L0022-verbs-bad (be), ugly (be)-un.wav |
| | /tló/ | [tɾó] | turn, turn sth | sxw-L0149-verbs-turn sth-un.wav |
| | /klã̃/ | [klã̃] | separate from | sxw-L0154-verbs-separate from so-un.wav |
| | /blĩ/ | [bli] | roll | sxw-L0275-verbs-roll-un.wav |

Finally, there is a neutralization of the contrast between /x/ and /fi/ preceding nasalized vowels, such that only the voiced /fi/ appears before nasalized vowels. Similarly, there is a neutralization of the contrast between /xw/ and /fiw/ preceding nasalized vowels, such that only the voiced /fiw/ appears before nasalized vowels.⁷

⁷ The single exception that I am aware of is the marker [xé̃], which is used in identification clauses for proximal objects and means 'this is' or 'here is'. I believe this morpheme could be derived historically from an amalgam of the demonstrative [xé] 'this' and the marker [mẽ̃] which is used in identification clauses for distal objects and means 'that is' or 'there is'.

| | | | | |
|-----|--------|---------------------|--------------|---------------------------------|
| (9) | /xú/ | [xú] | dry, be dry | sxw-L0155-verbs-dry (be)-un.wav |
| | /hù/ | [hù] | kill | sxw-L0074-verbs-kill-un.wav |
| | /hũ/ | [hũ] | open | sxw-L0080-verbs-open-un.wav |
| | */xũ/ | | | |
| | /õxwê/ | [õxwê] | year | sxw-L0250-VCV nouns-year-un.wav |
| | /õhwè/ | [õhwè] | fish | sxw-L0021-VCV nouns-fish-un.wav |
| | /hwě/ | [hwě ^R] | mature, grow | sxw-L0245-verbs-mature-un.wav |
| | */xwě/ | | | |

Furthermore, there is a neutralization of the contrast between /x/ and /xw/ preceding rounded vowels, with only /x/ appearing before rounded vowels. Similarly, there is a neutralization of the contrast between /h/ and /hw/ preceding rounded vowels, with only /h/ appearing before rounded vowels.⁸

| | | | | |
|------|--------|---------------------|-------------|----------------------------------|
| (10) | /xõ/ | [xõ] | hit, beat | sxw-L0026-verbs-hit, beat-un.wav |
| | /xú/ | [xú] | dry, be dry | sxw-L0155-verbs-dry (be)-un.wav |
| | */xwo/ | | | |
| | */xwu/ | | | |
| | /hù/ | [hù] | kill | sxw-L0074-verbs-kill-un.wav |
| | /õhó/ | [õhó ^R] | money | sxw-L0270-VCV nouns-money-un.wav |
| | */hwo/ | | | |
| | */xwo/ | | | |

Taken together with the neutralization of contrast between /x/ and /h/ preceding nasalized vowels, this means that only /h/ can precede a nasalized rounded vowel /ũ/ or /õ/—/x/, /xw/ and /hw/ do not appear in this environment.

1.4.6 Vowel elision

In section 1.4.1, it is noted that the initial vowel of monomorphemic V.C(C)V nouns is either /a/, /ɛ/ or /o/.⁹ These initial vowels may historically have had a role either as noun class prefixes, or as derivational prefixes (deriving nouns from verbs). Synchronically, however, these initial vowels are not involved in any productive derivational process, nor are there any indications in the language that noun classes have a role in the grammar.

A role that the initial vowels do seem to fill is that of ensuring that nouns satisfy the constraint of being minimally bisyllabic; there is a constraint in Saxwe

⁸ There is one exception to this, which is the exclamation [xwò], used to express amazement and, in some cases, disapproval.

⁹ The prefix /o/ in Saxwe often corresponds to the prefix /e/ in cognate words in neighboring languages such as Gen and Aja.

that with the exception of pronouns and borrowed nouns, all nouns must be minimally bisyllabic in their lexical form.

That being said, in normal to fast speech, the segmental features of the initial vowels /o/ and /ɛ/ on the noun may be elided following the verb. This happens without deletion of the tone-bearing unit and only when the initial vowel has an underlying M tone. The initial vowel /a/ is not usually elided in this context, and when the noun begins with initial /a/, it is sometimes the final vowel of the preceding verb that is elided instead.¹⁰ Since verbs usually have the form C(C)V, this elision is a means of continuing the preferred C(C)V pattern throughout the utterance. Noun-initial vowel elision is most frequent for common nouns such as [ɔnú] 'thing', [ɔxó] 'word, utterance', and [ɔgbè] 'speech, voice, language', which are used in phrasal verb utterances.¹¹

| | | | | | |
|------|------------|---|-----------------------|-------------------|-----------------------|
| (11) | /dū ɔdú/ | → | [dū nú] | eat | lit. eat thing |
| | /lɔ ɔxó/ | → | [lɔ xó] | speak | lit. tell a word |
| | /dò ɔgbè/ | → | [dò gbè] | greet | lit. put a speech |
| | /dó ɔdjú/ | → | [dó djú] | be dirty | lit. have dirt / mess |
| | /dū ɔgá/ | → | [dū gá ^R] | become the leader | lit. eat leader |
| | /dò ɔxwá/ | → | [dɔxwá] | cry out | lit. put shout |
| | /dò ɔxwá/ | → | *[dò xwá] | cry out | lit. put shout |
| | /dʒɛ ɔdɔ̃/ | → | [dʒɔ̃dɔ̃] | become ill | lit. fall illness |
| | /dʒɛ ɔdɔ̃/ | → | *[dʒɛ dɔ̃] | become ill | lit. fall illness |

The more infrequent or unusual the noun, the less likely its prefix vowel will be elided. A brief examination of several of the texts in my corpus indicates also that a noun that has discourse-level pragmatic focus on it is not as likely to have its prefix vowel elided. This is a topic that could be pursued for further study.

1.5 Morphophonological processes

Saxwe has several interesting morphophonological processes that will be referred to in this study of tone. This discussion of morphophonological processes draws from Beavon-Ham and Ham (2013). In section 1.5.1, I look at the behavior of the first and third person singular object suffixes. In section 1.5.2, I discuss the reduplication

¹⁰ It is not within the purview of this study to give a detailed account of vowel elision. One of the cases I am aware of where the prefix vowel /a/ is elided is in /dī ɔsā/, a phrasal verb meaning 'go for a stroll', which is pronounced often as [dī sã].

¹¹ Interestingly, the initial [ɛ] of the word [ɛmɛ̃] 'person' is not permitted to be elided:

| | | | | |
|-------------|---|-------------|------------------|----------------------|
| /kã ɛbɛ̃/ | → | *[kã mɛ̃] | look for someone | lit. look for person |
| /kpɔ̃ ɛbɛ̃/ | → | *[kpɔ̃ mɛ̃] | find someone | lit. see person |

process that is involved in deriving nominal and adjectival forms from monomorphemic verbs.

1.5.1 First and third person singular object suffix

When the verb is followed by the 1SG or 3SG object, the form used for this object is a pronominal suffix composed of a single vowel which assimilates to the features of the final vowel of the verb stem. Following this process of assimilation, the stem vowel undergoes strengthening. The details of this process are discussed at length in section 4.6. Here, I simply show the phenomenon.

The following data in (12) illustrate this process with the 1SG pronominal suffix, a vowel which is specified only for the feature [back]. In these examples, the form [é] is the 3SG pronoun. The underlying verb is given first.

(12) Verb followed by 1SG pronominal suffix (V [back])

| | | | |
|----|-------------------|------------------|------------------------------------|
| a. | /sɪ/ → [é sjú:] | he respected me | sxw-L0030-verb plus pronoun-un.wav |
| b. | /wí/ → [é wǐjú:] | he awakened me | sxw-L0032-verb plus pronoun-un.wav |
| c. | /kpé/ → [é kpjô:] | he met me | sxw-L0034-verb plus pronoun-un.wav |
| d. | /gbé/ → [é gbjô:] | he refused me | sxw-L0036-verb plus pronoun-un.wav |
| e. | /hě/ → [é hjǐ:] | he supported me | sxw-L0038-verb plus pronoun-un.wav |
| f. | /bú/ → [é bú:] | he lost me | sxw-L0040-verb plus pronoun-un.wav |
| g. | /zú/ → [é zú:] | he insulted me | sxw-L0042-verb plus pronoun-un.wav |
| h. | /kó/ → [é kô:] | he laughed at me | sxw-L0044-verb plus pronoun-un.wav |
| i. | /sǐ/ → [é sǐ:] | he took me | sxw-L0046-verb plus pronoun-un.wav |
| j. | /kpǐ/ → [é kpǐ:] | he saw me | sxw-L0048-verb plus pronoun-un.wav |
| k. | /tá/ → [é tá:] | he drew me | sxw-L0052-verb plus pronoun-un.wav |
| l. | /fá/ → [é fá:] | he embraced me | sxw-L0054-verb plus pronoun-un.wav |

A similar process of assimilation following by strengthening occurs when the verb is followed by the 3SG pronominal suffix, a vowel which is unspecified for any feature.

(13) Verb followed by 3SG pronominal suffix (unspecified V)

| | | | |
|----|-------------------|-------------------------------|------------------------------------|
| a. | /tʃĩ/ → [é tʃĩ:] | he turned it off | sxw-L0001-verb plus pronoun-un.wav |
| b. | /wĩ/ → [é wĩ:] | he awakened it | sxw-L0003-verb plus pronoun-un.wav |
| c. | /flé/ → [é flé:] | he husked it | sxw-L0005-verb plus pronoun-un.wav |
| d. | /bé/ → [é bé:] | he gathered it | sxw-L0007-verb plus pronoun-un.wav |
| e. | /tré/ → [é tré:] | he ripped it | sxw-L0009-verb plus pronoun-un.wav |
| f. | /bú/ → [é bwĩ:] | he lost it | sxw-L0013-verb plus pronoun-un.wav |
| g. | /tũ/ → [é twĩ:] | he untied it | sxw-L0015-verb plus pronoun-un.wav |
| h. | /tó/ → [é twê:] | he pounded it | sxw-L0018-verb plus pronoun-un.wav |
| i. | /sú/ → [é swê:] | he took it | sxw-L0020-verb plus pronoun-un.wav |
| j. | /kpǎ/ → [é kpwê:] | he saw it | sxw-L0022-verb plus pronoun-un.wav |
| k. | /tá/ → [é tjê:] | he drew it | sxw-L0024-verb plus pronoun-un.wav |
| l. | /kpá/ → [é kpjê:] | he carried him on the back | sxw-L0026-verb plus pronoun-un.wav |

1.5.2 Reduplication processes involved in derivation

Saxwe verbs undergo a process of reduplication to create either an action nominalization or an adjectival form (both syntactic forms having a single phonetic realization). The following are examples of these reduplicated forms. In these examples, [ɔnú] means 'thing'.

| | | | | |
|---------|--------|---------------|---|-------------------------------------|
| (14) a. | /lĩ/ | [ɔnú lílí] | 'grinding sth' or 'sth ground' | sxw-L0007-verb reduplication-un.wav |
| b. | /dǎ/ | [ɔnú dǎdǎ] | 'cooking sth' or 'sth cooked' | sxw-L0003-verb reduplication-un.wav |
| c. | /gò/ | [ɔnú gígò] | 'healing sth' or 'sth healed' | sxw-L0011-verb reduplication-un.wav |
| d. | /kǎ/ | [ɔnú kíkǎ] | 'searching for sth' or 'sth searched for' | sxw-L0015-verb reduplication-un.wav |
| e. | /gblé/ | [ɔnú gbígblé] | 'ruining sth' or 'sth ruined' | sxw-L0039-verb reduplication-un.wav |
| f. | /dū/ | [ɔnú dūdú] | 'eating sth' or 'sth eaten, food' | |

This process, including the tone of these forms, is discussed in detail in section 4.4.3. Briefly here, we can see that the reduplication template is a CV prefix, and that only the initial consonant of the verb stem is copied to this prefix, as seen in (14)e [ɔnú gbígblé]. The prefix vowel is high; specifically, [i] unless the verb stem contains the back vowel [u], in which case the the prefix vowel is [u].

For some speakers, nasal harmony is part of this reduplication process. This is not true of the speaker whose data is found in (14). However, for speakers for whom nasal harmony is a normal part of this process, the verb /kã/ in (14)d would give [õnú kíká].

1.6 Vowel underspecification in Saxwe

Both in the reduplication process described in section 1.5.2 and in borrowed words, epenthetic vowels are high—most commonly /i/, but in some cases /u/. In borrowed words, /i/ is typically added to the end of a word in order to permit resyllabification of a closed syllable so that only open syllables are pronounced. This is seen in [tʃótʃí], borrowed from the English word 'church', and in [tʃédʒi], borrowed from English 'change'. However, borrowed words that end in closed syllables with labial sounds, such as the French 'robe', generally get an epenthetic /u/, as in [fílóbù].

These facts could lead to a suspicion that /i/ is the radically underspecified vowel in the Saxwe system. If we look at surrounding languages, we see that for Gen, a neighboring Gbe language, Abaglo and Archangeli (1989) argue that /e/ is the radically underspecified vowel. Pulleyblank (1988) presents a case for /i/ being the radically underspecified vowel in Yoruba, a language that is spoken in a geographic region close to the Saxwe people.

In Saxwe, however, there is stronger evidence for the vowel /ε/ being the radically underspecified vowel. This analysis is reflected in the table of the Saxwe vowel inventory, copied here for ease of reference.

Table 3 - Saxwe vowel inventory (repeated)

| | | | [back] | | | |
|--------|---|---------|--------|---------|---------|---------|
| | | [nasal] | | [nasal] | [round] | |
| | | | | | | [nasal] |
| [high] | i | ĩ | | | u | ũ |
| [ATR] | e | | | | o | |
| | ε | ẽ | | | ɔ | õ |
| [low] | | | a | ã | | |

In the Gbe languages, V.C(C)V nouns have a restricted set of vowels that may appear in initial position. In neighboring languages such as Gen and Aja, there are two options: /a/ or /e/. Saxwe adds a third option, /ε/, to its inventory of /a/ and /o/ (the latter which is the Saxwe cognate of the initial vowel /e/ found in other Gbe languages).

In addition to the group of words that are pronounced by all Saxwe speakers with the initial vowel /ɛ/, there are a number of words which are pronounced with the initial vowel /a/ by some speakers of Saxwe, but with the initial vowel /ɛ/ by other Saxwe speakers—a situation which could indicate that /ɛ/ is gaining in prominence in the language.

There are also a number of lexical items that are obviously cognate in Saxwe, Gen and Aja, but which differ in the appearance of [ɛ] in the Saxwe surface form—usually in place of [e] in Gen and Aja. The following Gen data are taken from Bole-Richard (1983). The Aja and Saxwe data are taken from my field notes.

| (15) Saxwe | Aja | Gen | |
|---------------------|---------|--------|--------------|
| [só kê] | [só kè] | | forgive |
| [õxê]/[õxé] | [xéví] | [xèví] | bird |
| [gèkê] | [kèkè] | | bicycle |
| [dídé] | [dèdì] | | ant |
| [té] | [té] | [té] | sting (v.) |
| [õdʒè] | [èdʒè] | [èdʒè] | salt |
| [ɛdè] | [àdè] | [àdè] | tongue |
| [ɛgbè] | [àgbè] | [àgbè] | life |
| [ɛkpé] | [èkpè] | [èkpè] | rock |
| [õzè ^R] | [zèví] | [èzè] | pot |
| [ɛsè] | [èsè] | | spirit |
| [ɛkpè] | [àkpè] | | thanks |
| [ɛvè ^R] | [èvè] | | Nile monitor |
| [õjè] | [èyì] | [èjè] | spider |

If /ɛ/ is the radically underspecified vowel in Aja as it is in Gen, then examples in (15) where /ɛ/ in Saxwe is substituted for /e/ in Aja or Gen are merely cases of differing surface realizations for a vowel which in the underlying form has no pre-assigned features.

1.7 Conventions of transcription used in this study

In this study, the following notations are employed for marking details of tone: the acute symbol (´) indicates high tone, the macron symbol (¯) indicates mid tone, the grave symbol (`) indicate low tone, the circumflex symbol (^) indicates a high-low falling tone, the symbol (ˇ) indicates a mid falling tone, the symbol (˘) indicates a low-high rising tone, the downward arrow (↓) indicates downstep, the degree symbol (°) following a low tone indicates that there is no utterance-final downglide and therefore marks a non-falling low, and finally the superscript letter R

(^R) indicates a final slight upglide.¹² These conventions are also summarized in the abbreviations on page xiii.

In the underlying representations in this study, I will be marking underlying tonal forms, not underlying phonemic forms. Therefore I will no longer be marking the underlying forms /b/, /d/, and /j/ for the surface forms [m], [n], and [ɲ]. There are several reasons for this. First, it improves clarity and helps the reader to focus on underlying tonal distinctions rather than phonemic distinctions. Second, it is shown in this study that this allophonic difference does not have a conditioning influence on tone in Saxwe, and therefore it is not clear how the derivation of allophones is ordered with respect to the derivation of allotones. Since it is not in the purview of this study to examine that question in depth, I prefer to go with what is the simplest notation.

1.8 Overview of Saxwe syntax

In this section, I outline the basics of Saxwe syntax, primarily to give the reader a framework for reading the examples given in this study. I first outline Saxwe constituent order typology in section 1.8.1 before turning to a general overview of the tense-aspect-modality (TAM) system in section 1.8.2.

1.8.1 Constituent order typology

Saxwe, like other Gbe languages, is an SVO language. The ordering in a transitive clause is Agent-Verb-Patient, and the ordering in an intransitive clause is Subject-Verb. The following is an overview of Saxwe constituent patterns categorized under head-initial or head-final patterns as generally labeled by typologists.

¹² Words that end with a low tone and that have a final slight upglide (marked as ^R) can, for some tokens coming from my primary data source, sound very much like words that end with a low tone and are simply non-falling (marked as ^o); there is some variation among Saxwe speakers as to how pronounced they make the final upglide. This is explored in the instrumental study discussed in sections 7.5.3 and 7.5.4.

Table 4 - Constituent order patterns in Saxwe

| Parameter | Correlation with head-initial patterns | Correlation with head-final patterns |
|--|--|--------------------------------------|
| main clause | VO | |
| adposition | prepositions | postpositions |
| genitive construction | N—modifier—suffix (-t̃) | |
| associative construction | | modifier—associative (wé)—N |
| head noun and modifier (adjective, numeral, relative clause) | N—modifier | |
| normal relationship of TAM markers to verb | TAM marker—V | |
| imperfective construction | preverbal tonal element AND post-argument marker | |
| negation | preverbal marker AND clause-final tonal element | |
| YNQ | | sentence-final tonal element |
| question words | sentence-initial | |

Aboh (2004) examines extensively the topic of clause structure in Gbe languages, drawing on data from Gun, Fon, Gen, and Ewe. The Saxwe data are very much in keeping with the overall distributions of head-initial and head-final surface patterns found among those languages. The most significant innovation in Saxwe is the post-argument imperfective marker [ñ] which follows not only the verb, but also the object in the clause, but which also has a preverbal tonal element associated with it. This is discussed in sections 1.8.2 and 5.1.

As with other Gbe languages (Aboh, 2010b), Saxwe noun phrases have the following ordering of elements: Noun – Adjective – Numeral – Relative clause – Demonstrative – Discourse specificity marker – Plural.

In Saxwe, the discourse specificity marker (terminology adopted from (Aboh, 2010b)) has the form [lá]. Unlike the determiner "the" in English, the marker [lá] does not denote identifiability or objective referentiality of an object, but rather marks discourse referentiality (Payne, 2012). A noun that is *not* marked with this discourse specificity marker [lá], can be indefinite in certain utterances. Alternatively, given the context of the sentence, it can also be definite in the sense of being identifiable or it can be understood as a mass noun (Aboh, 2010b). In this study, I will typically translate a Saxwe bare noun using the English indefinite article unless the context seems to require otherwise. In my glosses, the marker [lá] will be labeled as a determiner.

The following are examples of the structures discussed thus far.¹³

¹³ The following abbreviations are used in these examples: 2-second person, 3-third person,

- (16) Noun and determiner
 [õkp̄ l̄á]
 leopard DET
 the leopard (in question) *sxw-L0009-noun phrases-un.wav*
- (17) SVO clause structure
 [õl̄ó d̄ú ˩n̄ú]
 crocodile eat thing
 A crocodile ate. *sxw-L0352-clause frames-un.wav*
- (18) Prepositional phrase
 [j̄ē z̄ò l̄è bw̄é]
 3PL move at here
 They passed through here. *sxw-L0010-prepositions-un.wav*
- (19) Postpositional phrase
 [j̄ē l̄ē õf̄h̄ú m̄ē]
 3PL be.at car in
 They are in the car. *sxw-L0010-postpositions-un.wav*
- (20) Genitive construction
 [ḡèk̄é k̄òf̄i-t̄ò]
 bicycle Kofi-GEN
 Kofi's bicycle
- (21) Associative construction
 [ē̄m̄ē w̄é ód̄â]
 person AM hair
 a person's hair *sxw-L0010-associative construction-un.wav*
- (22) Noun and modifier
 [j̄ē kp̄ó ó˩n̄ú z̄été j̄é]
 3PL see thing all PL
 They saw all the things. *sxw-L0030-NP boundary tests-un.wav*
- (23) Preverbal TAM marking
 [õl̄ó n̄ó v̄à^R]
 crocodile HAB come
 Crocodiles habitually come. *sxw-L0089-auxiliaries-un.wav*

AM-associative marker, DET-determiner, FOC-focus, GEN-genitive suffix, HAB-habitual, IPFV-imperfective, PL-plural, Q-question, SG-singular, YNQ=yes-no question. The tones marked in this section are surface tones.

- (24) Imperfective aspect
 [é ↓ŝ n̂]
 3SG IPFV-leave IPFV
 He is leaving. *sxw-L0109-auxiliaries-un.wav*
- (25) Negation
 [jē òn vâ]
 3SG NEG come-NEG
 They didn't come. *sxw-L0395-auxiliaries-un.wav*
- (26) Yes-no question marker
 [òd̂ ɲ̂:]
 snake be.good-YNQ
 Are snakes good? *sxw-L0033-YNquestions-un.wav*
- (27) Question words
 [b̂ lé ó ↓ŝ]
 where FOC:Q 2SG leave
 Where are you from? (lit. Where did you leave?) *sxw-L0001-questions-un.wav*

1.8.2 Tense, aspect and modality

Saxwe has a verbal system that mostly makes use of the categories of aspect and modality with only one reference to tense. This is not surprising; Ameka and Kropp Dakubu (2008) note that among Kwa languages, a general finding is that aspect and modality are by far the more important facets of the grammar of the verb, with the contrast between perfective and imperfective being of particular importance.

Saxwe tense, aspect and modality (TAM) markers are generally phonologically independent auxiliaries. There are elements of TAM marking that are simply tonal and do not include a segmental element. The majority of the TAM markers appear in the clause before the verb. However, some—such as the imperfective and completive markers—appear after the verb.

There is a morphologically unmarked verb form in Kwa languages that has been given multiple labels: the "perfective" (Aboh, 2004; Aboh & Essegbey, 2010; Winford & Migge, 2007), the "aorist" (Ameka 2008), and the "factative" (Welmers, 1973). Welmers describes the Yoruba "factative" by saying that "the construction expresses the most obvious fact about the verb in question, which in the case of active verbs is that the action was observed or took place, but for stative verbs is that the situation obtains at present" (p. 346-7).

In Saxwe, as in these other Kwa languages, morphologically unmarked action verbs are assumed to have taken place in the past, as in (28).

- (28) [é dɛ̀ ògbă lé ótà bò kpó̀ gòdò°]
 3SG remove hat at head CONJ look area.behind
 He removed his hat from his head and looked back.
 sxw-T0047-texts-un.wav

Stative verbs, when used in the context of a discussion in the present, are assumed to describe states that hold true in the present, as in (29). When used in the context of utterances referring to past events, the stative verb is assumed to describe a past state, as in (30).

- (29) [kɔ̀fí lé ˀbwé]
 Kofi be.at here
 Kofi is here. sxw-L0001-other clauses-un.WAV

- (30) [é lé óˀmɔ̀ tɔ̀hɔ̀-tɔ̀ lá dʒí]
 3SG be.at path Tohon- GEN DET on
 He was on the path to Tohon. sxw-T0101-texts-un.wav

Therefore, the interpretation of the unmarked verb in Saxwe has to do with both the lexical properties of the verb and the temporal framework of the discourse.

The following is a brief overview of the Saxwe auxiliary TAM markers, focusing on TAM marking that is seen in examples in this study. I include negation in this overview because the negation of future events is tied to TAM marking. This topic is examined in depth in chapter 5.

(31) Saxwe markers of tense, aspect and modality
(preverbal unless otherwise noted)

| | | |
|-----------------|-----------------------------------|---|
| Tense | Future (FUT) | [nã] |
| Aspect | Imperfective (IPFV) | preverbal /M/ <i>with</i> post-argument [n̄] |
| | Progressive (PROG) ¹⁴ | [ló] <i>with</i> IPFV marking |
| | Habitual (HAB) ¹⁵ | [n̄] |
| | Anterior (ANT) ¹⁶ | [ò] |
| | Repetitive (REPET) | [m̄] |
| | Completive (COMPL) ¹⁷ | clause-final [vò] |
| Modality | Subjunctive (SBJV) | [á] |
| | Prospective (PROSP) ¹⁸ | [kâ] <i>with</i> /H/ <i>with</i> IPFV marking |
| | Imperative (IMP) | /L/ |
| | Jussive (JUSS) | [ní] |
| | Prohibitive (PROH) | [kâ] |
| | Outcome (OUTC) ¹⁹ | [dó] |
| Negation | Default negation | [ǝ̄] <i>with</i> clause-final /L/ |
| | Future negation | [ǝ̄] <i>with</i> /H/ <i>with</i> IPFV marking |

As is the case in the Gbe languages Gun and Fon, Saxwe has a single tense marker: the future [nã] (Aboh & Essegbey, 2010; Lefebvre & Brousseau, 2002; Winford & Migge, 2007).

Imperfectivity is a very important aspectual distinction made in the Saxwe verbal system. Imperfective marking is obligatory when marking the progressive, the prospective, and negative future events.²⁰ The resulting combinations are interesting as they can involve the juxtaposition of multiple floating tones. The way

¹⁴ The progressive [ló] is used to emphasize the ongoing nature of an event.

¹⁵ This aspect marker is grammaticalized from the verb [n̄] 'rest, remain'.

¹⁶ This form resembles the perfect. However Givón (1984) states that the perfect has four facets: anteriority, counter-sequentiality, lingering relevance, and perfectivity. The Saxwe anterior has the first three characteristics, but not the fourth; it may co-occur with the imperfective.

¹⁷ This aspect marker is probably grammaticalized from the verb [vò] 'finish'.

¹⁸ The prospective is used to express events that are about to happen, as well as events that the subject wishes will happen.

¹⁹ The modality which is labeled here as outcome projection is often used in subordinate clauses marking purpose or result, as well as in counterfactual conditional clauses.

²⁰ The progressive and the habitual are mutually exclusive. The progressive must obligatorily co-occur with the imperfective, while the habitual may optionally co-occur with the imperfective.

these various elements are ordered in these cases and how they are realized tonally is discussed in chapter 5.

This very brief overview of the Saxwe TAM system is intended to set the stage for sections in this study that touch on syntax. This concludes the discussion of background information having to do with the Saxwe language and speakers of this language. I turn now to a brief summary of the points which come out of this chapter which I consider most salient to the rest of the study.

1.9 Conclusions

In section 1.1, we see that historical accounts of the Saxwe people theorize that they are descendants of a Yoruboid-speaking population who immigrated into the Gbe-speaking region and adapted their speech to that of Gbe speakers. This has led to the evolution of a Gbe language that displays some idiosyncratic structures not seen in many of the other Gbe languages.²¹ With regard to tone, we will see in this study that Saxwe has an underlying three-way tonal contrast, as does Yoruba, but much of the historical assignment of tone is influenced by consonant-tone interaction—a phenomenon which heavily influences the tonal systems of all the Gbe languages.

The overview of Saxwe phonology in section 1.4 highlights the absence of phonemic nasalized consonants in Saxwe. This is important because we see that in the category of nouns, some of the anomalous cases in the historic assignment of tone in Saxwe involve words that contain /b/ or its allophone [m], or /d/ or its allophone [n].

The morphophonological processes described in section 1.5 include the suffixation of a pronominal form to a verb and the derivation of nominal or adjectival forms from a verb using a process of reduplication. These processes are revisited, with a focus on describing associated tonal phenomena, in sections 4.4.3 and 4.6.

The brief overview of Saxwe morphosyntax in section 1.8 should facilitate interpretation of the example sentences given in this study. It also provides a preview of some of the issues which are discussed in chapter 5, including the way in which grammatical floating tones interact with the rest of the elements on the tonal tier.

I now turn to the theoretical frameworks which inform this analysis of Saxwe tone.

²¹ For instance, in Saxwe, the conjunction [bō] used in coordinate clauses is located after the subject of the second clause and before verbal auxiliaries. This is where the coordinating conjunction is found in Yoruba. To my knowledge, in all other documented Gbe variants, the coordinating conjunction precedes the subject of the second clause.

